

centrifuge No.:
user manual - Cat. No.:

MPW-380, MPW-380R
20380/R.ENG



2013-05-22

USER MANUAL



LABORATORY CENTRIFUGE

MPW-380/R







Read this before use!

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WARNING SIGNS AND HAZARD ICONS.

	WARNING! Warning of potential injury or health risk.
	DANGER! Risk of electric shock with potential for severe injury or death as a consequence.
	DANGER! Biohazard with potential for risk to health or death as a consequence.
	DANGER! Risk of explosion with potential for severe injury or death as a consequence.

This manual was prepared with special care. MPW MED. INSTRUMENTS may change the manual at any time and without notice because of improvements, typographical errors, inaccuracies of current information or improvements to facilities.

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1 Technical specification

manufacturer	MPW MED. INSTRUMENTS 46 Boremlowska Street, 04-347 Warsaw, Poland			
type	MPW - 380		MPW - 380R	
mains voltage, L1+N+PE, ±10%	230V	115V	230V	115V
mains frequency, ±10%	50/60Hz		50Hz	60Hz
connected load (max.)	800W		1300W	
cooling medium	-		R507 (CFC/HCFC free)	

	MPW - 380	MPW - 380R
capacity (max.)	1600 ml	
speed – RPM	90 ÷ 18000 rpm (step 1 rpm)	
force – RCF	31150 x g (step 1 x g)	
kinetic energy (max.)	19559 Nm	
running time	00:00:01 ÷ 99:59:59 – [hours, min., sec] (step 1s)	
time counting	since start button is pressed / since preselected speed is reached	
short-time operation mode – SHORT	yes	
continuous operation mode – HOLD	yes	
user programmes	99 +1*	
adjustable temperature	-	-20 ÷ 40°C** (step 1°C)
initial cooling/heating PROG 99 (90 ÷ 2500 RPM)	no/no	yes/no
guaranteed temperature with max. rotor speed	-	≤4°C
cooling/heating without centrifuging	no	yes/no
cooling/heating with centrifuging	no	yes/no
acceleration (ACEL)	10 linear curves	
deceleration (DECEL)	10 linear curves	
programmable non-linear curves:		
acceleration	10	
deceleration	10	
USB communication	yes	
Electromagnetic compatibility	according to PN-EN 55011	
ambient conditions	PN-EN 61010-1 p.1.4.1	
set-up site	indoors only	
ambient temperature	2° ÷ 40°C	
humidity (maximum relative humidity)	< 80%	
excess-voltage category	II	PN-EN 61010-1
pollution degree	2	PN-EN 61010-1
safety area	300 mm	
dimensions		
height (H)	455 mm	455 mm
width (W)	515 mm	715 mm
depth (D)	350 mm	650 mm
with open cover (H _{oc})	960 mm	960 mm
noise level	56 dB	56 dB
weight 230V	74 kg	112 kg
weight 115V	80 kg	117,5 kg

* factory program (program no. 99)

**time and possibility of obtaining a set temperature is dependant on multiple factors , including: rotor type, established RPM, ambient temperature; accuracy: - ±1°C appropriate for place of temperature sensor

Menu languages: POLISH, ENGLISH, SPANISH, PORTUGUESE, GERMAN, RUSSIAN, ITALIAN(without national characters).

2 Application


The MPW-380/R centrifuges are table top laboratory centrifuge for in vitro diagnostic (IVD). Devices are used for separation samples taken from people's, animal's and plant's components of different densities, under the influence of the centrifugal force, to provide information about their biological state (MPW-380 – ventilated, MPW-380R – with cooling). Its construction ensures easy operation, safe work and wide range of applications at laboratories engaged in routine medical analyses, biochemical research works etc. This centrifuge is not biotight and therefore during centrifugation of preparations requiring biotightness one has to use closed and sealed containers and rotors. In the centrifuge, it is prohibited to centrifuge caustic, inflammable and explosive preparations.



3 Installation

Open the package. Remove the box containing the accessories. Take out centrifuge from the container. Keep the box and packing materials in case of service shipping.


name	qty (pcs.)	cat no.
centrifuge MPW-380/R	1	see name plate
complete clamp	1	17798
spanner for the rotor / emergency opening of the cover	1	17799
power cord 230V / 115V	1	17009/17010
vaseline 20ml	1	17201
USB A-A cable, CD (MPW Editor application + FTDI USB drivers)	1	16598
user manual	1	20380/R.ENG

3.1 Location

	<ul style="list-style-type: none">▪ The centrifuge shall not be located near source of heat and shall not be subjected to direct sunlight.▪ The table for the centrifuge shall be stable and shall have flat-levelled table top.▪ It is necessary to ensure a safety zone of the minimum 30 cm round the centrifuge from every direction.▪ At the change of the place from cold to warm one, condensation of water will occur inside the centrifuge.▪ It is important then that sufficient time be provided for drying the centrifuge prior to starting the centrifuge again (min. 4 hours).
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	<ul style="list-style-type: none">▪ Supply voltage given on the rating plate has to be consistent with local supply voltage. MPW Med. instruments laboratory centrifuges are 1st safety class devices and they are provided with the three-core cable with the plug resistant to dynamic loadings.▪ Mains socket shall be provided with the safety pin. It is recommended to install emergency cut-out that shall be located far from the centrifuge, near the exit or beyond the room.
	<ul style="list-style-type: none">▪ Before switching on, check whether the centrifuge is connected to power supply correctly.

3.2 Current protection


	The centrifuge is equipped with thermal current protection. Fuse is situated in the plug-in socket unit at back wall of the centrifuge.
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4 Safety notes

4.1 *Operating personnel*

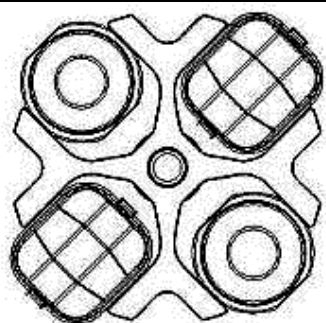
	<ul style="list-style-type: none">▪ Laboratory centrifuge can be operated by laboratory personnel after getting acquainted with user manual.▪ User manual shall be always held near the centrifuge.▪ The centrifuge can not be misused.
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4.2 *Guarantee*

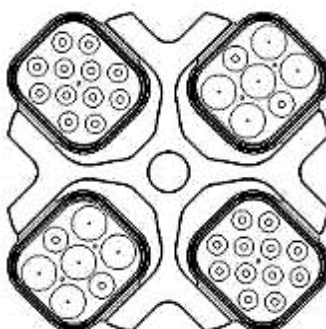
	<ul style="list-style-type: none">▪ Guarantee period amounts to minimum 24 months (unless otherwise specified in the purchase documents).▪ The service life of the centrifuge specified by the manufacturer amounts to 10 years.▪ After termination of guarantee period it is necessary to carry out yearly technical inspections of the centrifuge.▪ Manufacturer reserves the right to make technical changes in manufactured products.▪ Maximum period of storage of not used centrifuge amounts to 1 year. After this period, a service authorized by manufacturer should carry out technical inspection of the centrifuge.
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4.3 Loading the rotor

- Fix the rotor on the motor axis firmly.
- Avoid unbalance.
- Load opposite buckets with the same accessories.
- Centrifugation of the test tubes of different sizes:
 - There is a possibility to centrifuge test tubes of different sizes; however, it is absolutely necessary in such cases that opposite buckets and round carriers be the same.
 - Mass of different containers with test tubes spun at the same time has to be comparable. Swing-out rotors must be equipped with all four buckets.
- Lubricate the swing-out rotor journal pins.



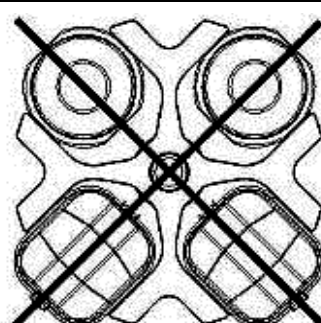
CORRECT



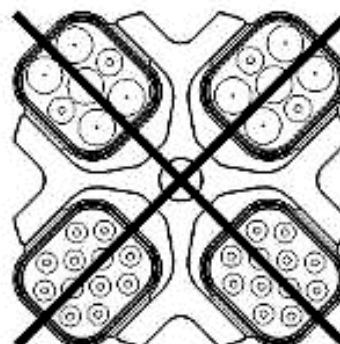
CORRECT



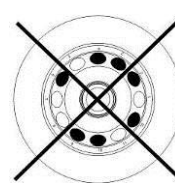
CORRECT



WRONG




WRONG






WRONG


- It is necessary to insert test tubes symmetrically on the opposite sides.

	<p>FILLING TUBES</p> <ul style="list-style-type: none"> ▪ Fill test tubes outside the centrifuge. ▪ Please pay special attention to the quality and proper thickness of the glass test tubes walls. Those shall be test tubes for centrifuges. ▪ Fill test tubes outside the centrifuge.
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4.4 *Safety hints*

	<p>ROTORS MAINTENANCE</p> <ul style="list-style-type: none"> ▪ Lubricate the swing-out rotor journal pins. ▪ Use only accessories in good condition. ▪ Protect equipment against corrosion using accurate preventive maintenance.
	<p>HS accessories maintenance</p> <ul style="list-style-type: none"> ▪ HS accessories maintenance. ▪ Make sure that rubber O-rings are lightly coated with silicone grease. Use high vacuum grease, e.g. type „C” by LUBRINA.

	<p>HAZARDOUS MATERIALS</p> <ul style="list-style-type: none"> ▪ Infectious materials could be processed in closed buckets only. ▪ It is not allowed to subject to centrifugation toxic or infectious materials with damaged leak proof seals of the rotor or test-tube. Proper disinfection procedures have to be carried out when dangerous substances contaminated the centrifuge or its accessories.
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	<p>EXPLOSIVE AND COMBUSTIBLE MATERIALS</p> <ul style="list-style-type: none"> ▪ It is not allowed to centrifuge explosive and inflammable materials. ▪ It is not allowed to centrifuge substances prone to reacting in result of supplying high energy during centrifugation. The centrifuge can not be operated in explosion-endangered areas ▪ It is not allowed to centrifuge materials capable of generating inflammable or explosive mixtures when subjected to air.
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4.5 *Maintenance conditions*



	<p>START-UP</p> <ul style="list-style-type: none"> ▪ Prior to switching the centrifuge on, one shall read carefully all sections of this instruction in order to ensure smooth operation and avoid damages of this device or its accessories. ▪ In order to protect the centrifuge against unbalance, fill in the test tubes up to the same weight.
	<p>TRANSPORTATION</p> <ul style="list-style-type: none"> ▪ Centrifuge must not be transported with the rotor mounted on the shaft..
	<p>GENERAL HINTS</p> <ul style="list-style-type: none"> ▪ One must use original rotors, test-tubes and spare parts only. ▪ In case of faulty operation of the centrifuge one shall ask for assistance of service of MPW MED. INSTRUMENTS company or its authorized representatives. ▪ It is not allowed to switch the centrifuge on if it is not installed properly or rotor is not fitted correctly.
	<p>CENTRIFUGES SUBSTANCES</p> <ul style="list-style-type: none"> ▪ It isn't allowed to exceed load limit set by the manufacturer. Rotors are intended for fluids of average homogeneous density equal to 1,2 g/cm³ or smaller when centrifugation is carried out at maximum speed. When fluids of higher density shall be used, then it is necessary to change density of centrifuges sample in PARAM/DENSITY field.

4.6 *Safety precautions*

For safety reasons, inspections of the centrifuge carried out by the authorized service at least once a year after the period of warranty. The reason for more frequent inspections could be corrosion inducing environment. Examinations should end with issuing report of validation that checks on the technical state of the laboratory centrifuge. It is being recommended to establish document where every repairs and reviews are being registered. Both these documents should be stored in the place of use of the centrifuge.

	<p>INSPECTION PROCEDURES CARRIED OUT BY THE OPERATOR</p> <p>Operator has to pay special attention to the fact that the centrifuge parts of key importance due to safety reasons are not damaged. This remark is specifically important as for:</p> <ul style="list-style-type: none"> ▪ Motor suspension ▪ Motor axis concentricity ▪ Fixing the pins in the bucket. ▪ Centrifuge accessories and especially structural changes, corrosion, preliminary cracks, abrasion of metal parts.
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	<ul style="list-style-type: none"> ▪ Screw joints. ▪ Inspection of the rotor assembly. ▪ Inspection of bioseals of the buckets if such are used. ▪ Control of execution of the guarantee yearly technical inspection of the centrifuge <p>Only the manufacturer-specified holders, included in the equipment list, as well as centrifuge capillaries, which diameter, length and durability are suitable, should be used for spinning in this centrifuge. The use of equipment made by other manufacturers should be consulted with the manufacturer of the centrifuge.</p> <ul style="list-style-type: none"> ▪ It is not allowed to lift or shift the centrifuge during operation, and rest on it. ▪ It is nor allowed to stay in the safety zone within 30 cm distance around the centrifuge neither leave within this zone some things, e.g. glass vessels. ▪ It is not allowed to put any objects on the centrifuge.
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	COVER OPENING
	<ul style="list-style-type: none"> ▪ It isn't allowed to open the cover manually in emergency procedure when rotor is still turning.
	ROTORS
	<ul style="list-style-type: none"> ▪ It is not allowed to use the rotors and round carriers with signs of corrosion or other mechanical defects. ▪ It is not allowed to centrifuge highly corrosive substances which may cause material impairment and lower mechanical properties of rotor and round carriers. ▪ It isn't allowed to use rotors and accessories not admitted by the manufacturer. Let to use commercial glass and plastic test tubes, which are destined to centrifuging in this laboratory centrifuge. One should absolutely not use poor quality elements. Cracking of glass vessels and test tubes could result in dangerous vibration of the centrifuge. ▪ It is not allowed to carry out centrifugation with the rotor caps taken off or not driven tight.

5 Operating

New generation of MPW MED. INSTRUMENTS laboratory centrifuges is provided with state-of-the-art microprocessor control systems, very durable and quiet asynchronous brushless motors and accessories consistent with requirements of the present-day user.

5.1 Centrifuge description



1. inspection glass	7. mains socket
2. cover	8. clamp
3. control panel	9. rotor cover
4. emergency cover opening	10. rotor
5. power switch	11. motor axle
6. USB port	

5.2 *Design*

The centrifuge has rigid self-supporting structure. Housing was made of sheet aluminium, back made of steel sheet. Front and cover was made of ABS type plastic. Cover is fixed on steel axles of hinges and from the front it is locked with two electromagnetic locks blocking possible opening during centrifugation. Rotation chamber casing was made of thick steel sheet. The rotation chamber bowl is made of stainless steel sheet. Rotors and containers are from aluminium, lids from polycarbonate and reductive inserts from the polypropylene.

5.3 *Rotor and accessories installation*

- Connect the centrifuge to the mains (master switch on left side of the centrifuge).
- Open the cover of the centrifuge by pressing the **COVER** key. Prior to putting the rotor in, one has to check if the rotating chamber is free of impurities, e.g. such as dust, glass splinters, residues of fluids that must be taken away.
- One shall fit the rotor on the motor shaft driving it home on the cone.



Fitting the rotor too shallow will result in lack of identification of the rotor after start of the centrifuge, displaying the error message and stopping the centrifuge.

- Screw-in the bolt for fixing the rotor (clockwise) and screw it tightly home with the supplied spanner for the rotor.
- Swing-out rotors have to be provided with the buckets in all seats. One should remember that every buckets swings individually. Bucket suspension studs should be lubricated periodically with technical petroleum jelly.
- In case of rotors designed with the cover they must not be used without it. Rotor covers must be closed exactly. Rotor covers ensure smaller drags of the rotors, proper setting of the test-tubes and airtight sealing.
- One should use only buckets intended for selected types of the rotor.
- Fill test tubes outside the centrifuge.
- Put on or screw the caps on vessels and rotors (if applicable).
- In case of centrifuging in an angle rotor, test tubes (buckets) have to be filled properly in order, próbówki (pojemniki) muszą być odpowiednio napełnione w celu uniknięcia wylewania.



Centrifuge will tolerate small weight differences occurring during loading of rotors. However it is recommended to equalize vessels loads as much as possible in order to ensure minimal vibrations during operation. When the centrifuge is started with large imbalance, the unbalance control system will switch-off the drive system and error signal will be transmitted. On the monitoring panel, error message will be displayed.

- In order to prolong lifetime of the rotor and gaskets rotors shall be lubricated with the maintenance oil, while gaskets and threaded parts shall be lubricated with the technical petroleum jelly.
- For replacement of the rotor one shall unscrew clamping and then grab the rotor with both hands at opposite sides, taking it away from drive shaft by pulling it up.

5.4 Control device

The microprocessor control unit of the centrifuge ensures broad possibilities of providing, realisation and reading of work parameters.

5.5 Setting parameters

Data setting and read-out system forms hermetically closed keyboard with distinctly accessible operation points. Easily readable displays signaling individual performed operations facilitate operator's programming and recording of parameters and condition of the centrifuge.

The centrifuge is provided with the USB interface that enables connection of the centrifuge to external PC unit with the printer and recording the centrifugation parameters.

5.6 Safety features

Cover lock

The centrifuge can be started only with properly closed cover. While, the cover can be opened only after stopping the rotor. In case of emergency opening of the cover during operation, the centrifuge will be immediately switched-off and the rotor will brake till complete stopping.

Unbalance detecting

When loads of opposite buckets or carriers in rotors are unbalanced, the drive will be switched-off during acceleration or operation of the centrifuge – and the error message will be displayed.

Rotor verification and checking compatibility with loaded program

Directly after starting centrifuging, a unit verifies the type of the rotor applied and in the case of its incompatibility with the type indicated in the application or absence of the rotor, the spinning process shall be stopped with simultaneous displaying the error message. The conformity of the type of the rotor is signalled with a single audible signal. Program no. 99 can be run without setting rotor, but the rotor must be supported by the centrifuge.

Rest state inspection

Opening of the centrifuge's cover is possible only with the rotor in the state of rest. When the rotor is being stopped, the STOP diode is on and goes off when it is stopped. (excepting emergency cover opening) – see p. TROUBLESHOOTING.

Checking of excessive temperature

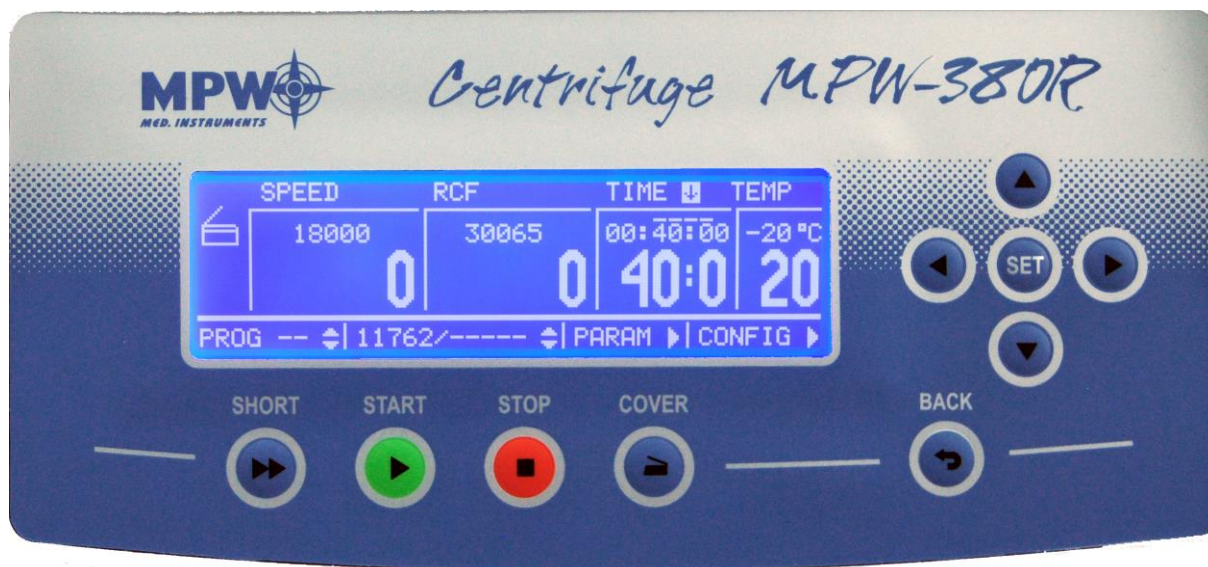
If temperature in rotation chamber exceeds 50°C (MPW-380) / 65°C (MPW-380RH) caused by, for example, malfunction of cooling system, drive will be switched off and error message will be displayed. The reboot is only possible after chilling device.

6 Centrifugation

Power switching ON/OFF is carried out with master switch situated on the side wall of the centrifuge. All settings on the centrifuge are done by means of the control panel.

6.1 Control panel

The control panel placed on the front casing serves the purpose of controlling centrifuge operation.



Control panel

▶▶	SHORT ¹	short-time centrifuging		
▶	START	start centrifugation run		
■	STOP ²	end centrifugation run		
🔒	COVER	cover opening		
↶	BACK	back buton	/	cancelling
▲	UP	navigating in menu	/	increasing values
▼	DOWN	navigating in menu	/	decreasing values
SET / •	SET	changing parameters	/	confirming changes
◀	LEFT	navigating in menu	/	
▶	RIGHT	navigating in menu	/	

¹ the centrifuge is working as long as the key is pressed

² first-time pressing press – will make stopping centrifuging with acceleration characteristics set in the current program (confirm message with pressing **STOP** or **BACK** key), second-time pressing – will make the centrifuging as fast as possible (quickest characteristic). During setting of the parameters, it serves for exiting zones on the primary screen without introducing changes.









6.2 Display

The display is located in the centre of the control panel. The main screen variants are presented below.

MAIN SCREEN	
MPW-380	
MPW-380R	


SPEED	rotor speed	assigned/measured
RCF	centrifugal force	assigned/measured
TIME	centrifuging time	assigned/measured
TEMP	temperature	assigned/measured
PROG —	program no.	
11199 / —	rotor no.	
PARAM	parameters of the centrifuge	
CONFIG	configuration menu	

	changing values		
	user acc/dec curves (ACC/DEC 10-19)		
	custom radius		
	density > 1,2 g/cm ³		
	counting time down (decreasing)		counting time up (increasing)
	cooling to set temperature		heating to set temperature
	centrifuging		centrifuging (with automatic cover opening)
	rotor stopped / closed cover		rotor stopped / opened lid
	stopping rotor		fastest decelerating
	identifying rotor		
	thermal chamber		
	temperature delay		
	time delay		
	zone mark of assigning of the centrifuging time		


	drop-down list		
	temporarily disabled		
	locked		
	time counting (blinking)		
	disabled option / drop-down list		active option / drop-down list
	disabled option		active option

6.3 *Centrifuging notes*

- Connect the centrifuge to the mains (master switch on left side of the centrifuge).
- Open the cover of the centrifuge by pressing the **COVER** key. Prior to putting the rotor in, one has to check if the rotating chamber is free of impurities, e.g. such as dust, glass splinters, residues of fluids that must be taken away.
- One shall fit the rotor on the motor shaft driving it home on the cone.

	Fitting the rotor too shallow will result in lack of identification of the rotor after start of the centrifuge, displaying the error message and stopping the centrifuge.
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- Screw-in the bolt for fixing the rotor (clockwise) and screw it tightly home with the supplied spanner for the rotor.
- Swing-out rotors have to be provided with the buckets in all seats. One should remember that every buckets swings individually. Bucket suspension studs should be lubricated periodically with technical petroleum jelly.
- In case of rotors designed with the cover they must not be used without it. Rotor covers must be closed exactly. Rotor covers ensure smaller drags of the rotors, proper setting of the test-tubes and airtight sealing.
- One should use only buckets intended for selected types of the rotor.
- Fill test tubes outside the centrifuge.
- Put on or screw the caps on vessels and rotors (if applicable).
- In case of centrifuging in an angle rotor, test tubes (buckets) have to be filled properly in order to avoid overflows.

	Centrifuge will tolerate small weight differences occurring during loading of rotors. However it is recommended to equalize vessels loads as much as possible in order to ensure minimal vibrations during operation. When the centrifuge is started with large imbalance, the unbalance control system will switch-off the drive system and error signal will be transmitted. On the monitoring panel, error message will be displayed.
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- In order to prolong lifetime of the rotor and gaskets rotors shall be lubricated with the maintenance oil, while gaskets and threaded parts shall be lubricated with the technical petroleum jelly.

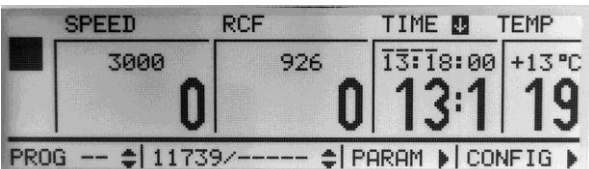
- For replacement of the rotor one shall unscrew clamping and then grab the rotor with both hands at opposite sides, taking it away from drive shaft by pulling it up.

6.4 Setting up RPM, RCF, TIME, temperature


On the main screen, it is possible to set:

rotating speed	SPEED (RPM)
relative centrifugal force	RCF
centrifuging time	TIME
centrifuging temperature	TEMP (R only)

Exemplary change of **SPEED** setting:


	<ul style="list-style-type: none"> ▪ Press SET (to enter edit mode). ▪ With ▲▼◀▶ keys mark SPEED fold (blinking).
	<ul style="list-style-type: none"> ▪ Press SET. ▪ Choose demanded order of magnitude by pressing ◀▶, e.g.: Xxxx (X - blinking). ▪ Set demanded value by pressing ▲▼. ▪ Repeat above two steps for other orders of magnitude. ▪ Confirm set value by pressing SET. ▪ Leave edit mode by pressing BACK.
When RPM is changed, RCF is automatically corrected.	

Exemplary change of **RCF** setting:


	<ul style="list-style-type: none"> ▪ Press SET (to enter edit mode). ▪ With ▲▼◀▶ keys mark RCF fold (blinking).
	<ul style="list-style-type: none"> ▪ Press SET. ▪ Choose demanded order of magnitude by pressing ◀▶, e.g.: Xxx (X - blinking). ▪ Set demanded value by pressing ▲▼. ▪ Repeat above two steps for other orders of magnitude. ▪ Confirm set value by pressing SET. ▪ Leave edit mode by pressing BACK.

When RCF is changed, RPM is automatically corrected.


Exemplary change of **TIME** setting:

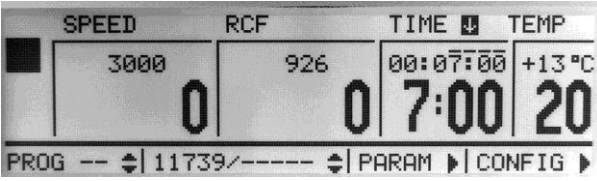


	<ul style="list-style-type: none"> Press SET (to enter edit mode). With ▲▼◀▶ keys mark TIME fold (blinking).
	<ul style="list-style-type: none"> Press SET. Choose demanded order of magnitude by pressing ◀▶, e.g.: Xx:xx:xx (X - blinking). Set demanded value by pressing ▲▼. Repeat above two steps for other orders of magnitude. Confirm set value by pressing SET. Leave edit mode by pressing BACK.


Exemplary change of **TEMP** setting:

	<ul style="list-style-type: none"> Press SET (to enter edit mode). With ▲▼◀▶ keys mark TEMP fold (blinking).
	<ul style="list-style-type: none"> Press SET. Set demanded value by pressing ▲▼. Confirm set value by pressing SET. Leave edit mode by pressing BACK.



Changing parameters during run

	<p>There is a possibility to change parameters: SPEED, RCF, TIME, TEMP during centrifuging. Such modifications give in currently running program. Modification during run is represented by PROG — symbol.</p>
---	--

Detailed description of setting values (e.g. TIME).	
	<ul style="list-style-type: none"> Press SET (to enter edit mode). With ▲▼◀▶ keys mark TIME fold (blinking).
<p style="text-align: center;">00:07:00</p> <p style="text-align: center;">hh : mm : ss</p> <p>e.g.:</p> <ul style="list-style-type: none"> centrifuging time – 7 minutes 00 seconds 	<ul style="list-style-type: none"> Press SET. Choose “hours”, “minutes” or “seconds” by pressing ◀▶, e.g.: XX:xx:xx (XX - blinking). Set demanded value by pressing ▲▼. Repeat above two steps to set demanded time. Confirm set value by pressing SET. Leave edit mode by pressing BACK.
	set value
	current value (most significant digits)
<p style="text-align: center;">----</p>	<p>— — — — symbol shows which orders of magnitude are currently shown in current value fold</p>

HOLD mode	continuous operation mode
	<ul style="list-style-type: none"> To run centrifuging in HOLD mode set 00:00:00 time. To end centrifuging in HOLD mode press STOP.

6.5 User programs

	<p>After switching centrifuge on, program that was used in previous session is being loaded.</p>
	<p>Modification during run is represented by PROG — symbol.</p>

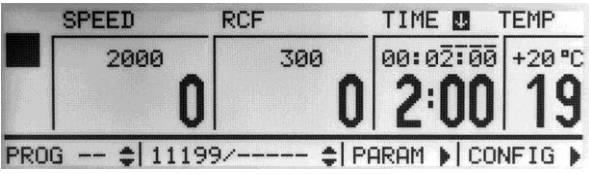
Choosing program:

FAST MODE:

- Press **SET**.
- With **▲▼◀▶** keys mark **PROG** — fold (blinking). Wcisnąć klawisz **SET**.
- Set demanded program by pressing **▲▼**.
- Confirm by pressing **SET**.



LIST:

- Press **SET**.
- With **▲▼◀▶** keys mark **PROG** — zone.
- Press **SET**.
- With **▲▼** keys choose demanded program number. (marked by **▶**).
- Confirm by pressing **SET**.
- With **▲▼** keys choose one of four possibilities: **LOAD**, **SAVE**, **DELETE**, **NEW**:
 ▶ – currently loaded program.
- **LOAD** – load program,
- **ZAPIS** – save settings as a program (confirm by selecting **YES** and pressing **SET**)
- **DELETE** – delete program (confirm by selecting **YES** and pressing **SET**)

	<p>NEW – load default parameters:</p> <ul style="list-style-type: none"> TEMPERATURE: +20°C, SPEED: 2000 RPM, TIME: 2 min.
---	---

6.6 Programs with user characteristics

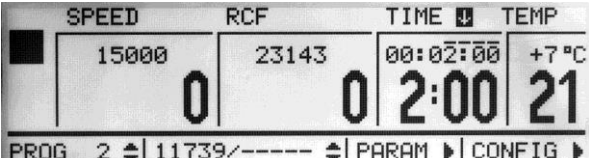

Loading a modified program in the **CURVES** fold is signalled by the icon on the main screen:

	<p>Icon  signals that program with user acceleration/deceleration characteristics is loaded.</p>
---	---

Since curves created by the user are connected with the number of the rotor and the value of speed set, loading of a program modified in such a way is subject to certain limitations. There is no possibility to change set speed and the rotor number (even when the centrifuge is not working). It is possible to modify the number of characteristics connected with the program in the PARA fold; setting ACEL and DECEL within the range 0 - 9 switches centrifuging process to default characteristics and the limitations are no longer applicable

It is not possible to change parameters (speed, rotor no. and others) during run, when program with user characteristic is loaded. Changing these parameters is possible in **PARAM/ACEL**, **PARAM/DECEL**.


6.7 Choosing rotors

There are two ways to select rotor:	
	FAST MODE
	<ul style="list-style-type: none"> Press SET. With ▲▼◀▶ keys mark —— / —— zone. Press SET. With ▲▼◀▶ keys mark choose demanded` rotor. Confirm by pressing SET.
	LIST
	<ul style="list-style-type: none"> Press SET. With ▲▼◀▶ keys mark  symbol. Press SET.



No	ROTOR	UASO	VELOC	FCR	RMAX	RMIN
1	11761	-----	16400	29168	97	65
2	11762	-----	18000	30065	83	50
3	11763	-----	16400	28266	94	62
4	11764	-----	16400	28566	95	40
5	11765	-----	16400	28566	95	84
6	11766	-----	18000	31152	86	50

- With ▲▼◀▶ keys select rotor number.
- Confirm by pressing **SET**.

6.8 *SHORT mode*

	SHORT mode
	<ul style="list-style-type: none"> In SHORT mode the centrifuge is working as long as the ▶▶ (SHORT) key is pressed or when set time is over.

6.9 *Terminating centrifugation*

	STOPPING CENTRIFUGATION CYCLE
	<ul style="list-style-type: none"> When preselected time is reached, centrifugation will end automatically.
	<ul style="list-style-type: none"> Pressing STOP for the first time will stop centrifuging with the characteristic set in loaded program. Confirm message by pressing STOP lub SET.
	<ul style="list-style-type: none"> Pressing STOP second time will stop centrifuging with the fastest characteristic.

7 Temperature control



MPW-380R only

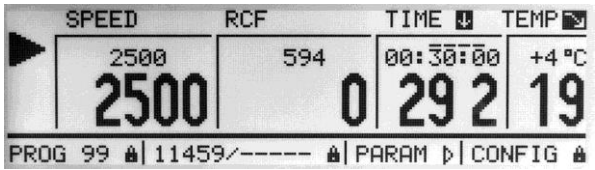




Centrifuge is equipped in ecological refrigerating system with temperature control. During centrifugation, there may appear differences in temperature on the display and temperature of the samples in the rotor. It depends on thermal conductivity of the rotor, and samples and centrifugation time.

Exemplary change of **TEMP** setting:


	<ul style="list-style-type: none"> Press SET (to enter edit mode). With ▲▼◀▶ keys mark TEMP fold (blinking). Press SET.
	<ul style="list-style-type: none"> Set demanded value by pressing ▲▼. Confirm set value by pressing SET. Leave edit mode by pressing BACK.
	<ul style="list-style-type: none"> When chamber is being cooled or heated, symbol is visible on the screen (blinking).

7.1 Initial cooling (MPW-380R) with centrifuging


<p>99 90 ÷ 2500 RPM</p>	<ul style="list-style-type: none"> In order to centrifuge preparations of a lowered temperature (deposited in the outside refrigerator) it is necessary to make initial refrigerating of the chamber, the rotor and containers, to the set low temperature, in order to minimise the difference of temperatures Initial cooling/heating function can be activated by executing PROGRAM 99. Parameters: <ul style="list-style-type: none"> temperature, speed: 90 ÷ 2500 RPM, time. <p>Initial cooling/heating functions can be terminated anytime by pressing STOP key.</p>
---------------------------------	--

	<p>When cooling function is active,  /  symbol is visible on the screen (blinking).</p> <p>When Initial cooling is active, PROG 99 and arrows  /  are visible (blinking) in TEMP fold.</p>
---	---


7.2 Initial cooling (MPW-380R) without centrifuging – THERMAL CHAMBER

	<p style="text-align: right;">CONFIG → THERMAL CHAMBER</p> <ul style="list-style-type: none"> There is possible to run centrifuge in THERMAL CHAMBER mode - cooling for R, cooling and heating for RH (rotor is at standstill). How to enable THERMAL CHAMBER is described in Parameters of centrifugation chapter.
---	---

7.3 Cooling (MPW-380R) in “START DELAY – OF TEMPERATURE” mode

	<p style="text-align: right;">CONFIG → START DELAY – OF TEMPERATURE</p> <ul style="list-style-type: none"> Centrifuging process will start, when preselected temperature is reached. How to enable run START DELAY – OF TEMPERATURE function is described in Parameters of centrifugation chapter.
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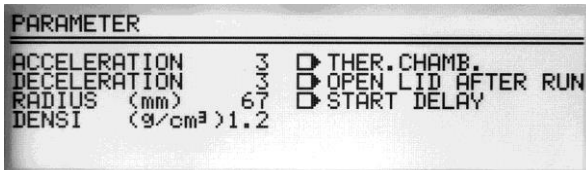
7.4 Cooling (MPW-380R) in „SHORT mode

	<ul style="list-style-type: none"> Cooling and heating features are available in SHORT mode. How to enable run centrifugation in SHORT mode is described in Centrifugation/SHORT mode.
---	---

7.5 *Cooling (MPW-380R) notes*

Centrifuges with cooling (MPW-380R) are equipped with an efficient cooling system. It allows obtaining selected temperatures in the chamber even at maximum spin speed or fast obtaining desired temperatures (e.g. 4°C and 36°C). Note that time and possibility of obtaining a set temperature is dependent on multiple factors, including: the power of the cooling system, the shape of the rotor, the rotor speed, ambient temperature, etc. The accuracy of the temperature stability of $\pm 1^{\circ}\text{C}$ is determined by the installation place of the temperature sensor.

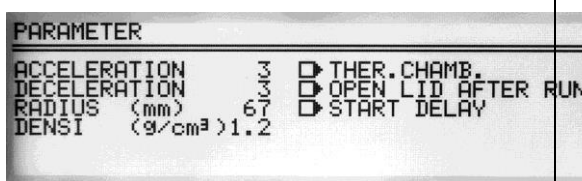
8 Parameters of centrifugation

	<ul style="list-style-type: none"> Press SET. With ▲▼◀▶ keys select PARAM. Press SET (to enter PARAM menu).
	

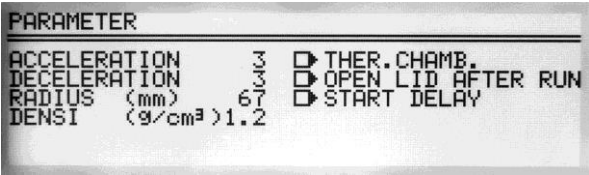

ACCELERATION	chosen acc. characteristic
DECELERATION	chosen dec. characteristic
RADIUS [MM]	current rotor radius
DENSI (g/cm ³)	sample density

THER. CHAMB.	cooling / cooling and heating of the chamber
OPEN LID AFTER RUN	opening cover after centrifuging automatically
START DELAY	starting delayed (after pressing START)

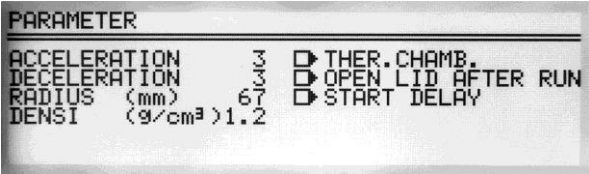

8.1 Accelerating/decelerating – changing characteristics

	<ul style="list-style-type: none"> ACCELERATION – 10 linear accelerating characteristics assigned to every rotor (0 ÷ 9), DECELERATION – 10 linear decelerating characteristics assigned to every rotor (0 ÷ 9).
---	--



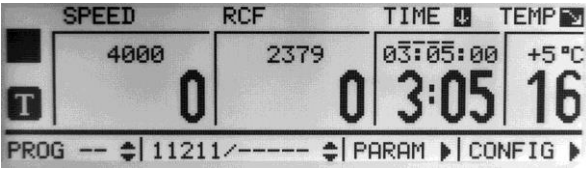
8.2 Radius

	<ul style="list-style-type: none"> RADIUS [mm] - control of the radius of the rotor within the range from R_{min} to R_{max}. Available values depends on chosen rotor, see — / — (LIST OF ROTORS fold).
	<ul style="list-style-type: none"> When radius is changed is activated, R! symbol is visible on the screen. Reducing of the rotor radius (and the resulting change of displayed RCF value) applies until switching off the power supply of the centrifuge or setting the R_{max} maximum radius once again (loading the program does not change this setting!). To change the rotor radius select RADIUS [mm] with ▲▼◀▶ keys. [MM]. Press SET. Set demanded value by pressing ▲▼. Press SET to accept changes.




8.3 Sample density

	<ul style="list-style-type: none"> DENSI (g/cm³) – default density is set to 1,2 g/cm³ (possible values $1,2 \div 9,9$ g/cm³).
	<ul style="list-style-type: none"> When density is changed, D! symbol is visible on the screen. Increasing density of the sample above 1,2 g/cm³ (and limiting of the maximum speed of centrifuging resulting from it) applies until switching off power supply of the centrifuge or setting the device back to 1,2 g/cm³. To change the density select DENSI (g/cm³) with ▲▼◀▶ keys. [MM]. Press SET. Set demanded value by pressing ▲▼. Press SET to accept changes.

8.4 Thermal chamber

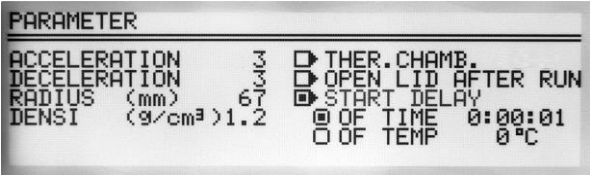
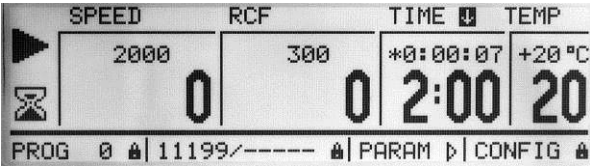


	MPW-380R only
	THERMAL CHAMBER
	<ul style="list-style-type: none"> With ▲▼◀▶ keys select THERMAL CHAMBER. Press SET (to turn on/off). Set demanded value by pressing ▲▼.
	<ul style="list-style-type: none"> When THERMAL CHAMBER function is activated, T symbol is visible on the screen. Changing temperature from the main screen is not possible. Opening cover terminates THERMAL CHAMBER function (closing cover back turns it on).
<ul style="list-style-type: none"> If THERMAL CHAMBER is turned on (in PARAM fold) and centrifugation completes, THERMAL CHAMBER will activate itself. THERMAL CHAMBER can be only activated when any other program is not running. 	

8.5 Automatic lid opening



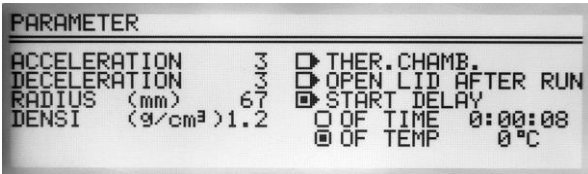




Automatic lid opening	OPEN LID AFTER RUN
	<ul style="list-style-type: none"> When centrifuge process is finished, cover will be opened automatically. When centrifuging is terminated by pressing STOP, opening cover is possible by pressing COVER.
	<ul style="list-style-type: none">  symbol means that OPEN LID AFTER RUN is active.

8.6 Start delay - of time

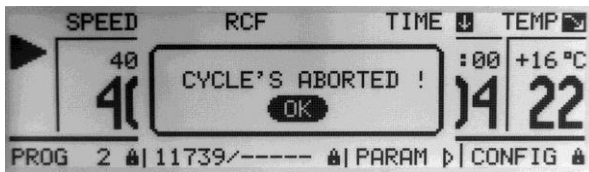
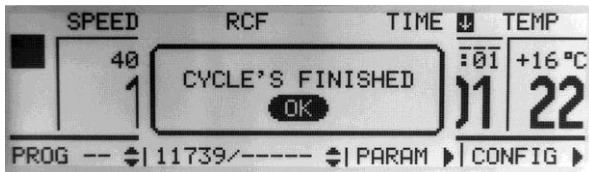


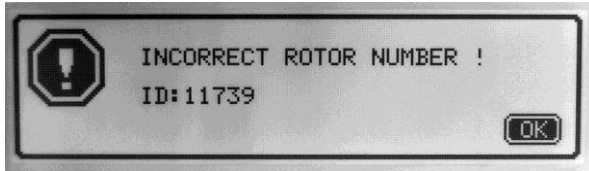
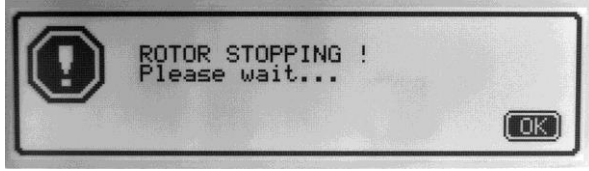
	Start centrifuging since preselected delay is reached.	START DELAY / OF TIME
---	--	------------------------------

	<ul style="list-style-type: none"> With ▲▼ keys select START DELAY. Press SET. Start delay can be set from 0:00:01 to 9:59:59. With ▲▼ keys select OF TIME. Press SET. Press ▼, then ► select time zone (e.g. 0:00:42). With ▲▼ keys set demanded value. Confirm by pressing SET.
	<ul style="list-style-type: none"> When START DELAY function is activated,  symbol is visible on the screen.  symbol informs that time is remaining.
<p>START DELAY / OF TIME function cannot be run when START DELAY / OF TEMP. is activated.</p>	

8.7 Start delay – of temperature

	MPW-380R only	
 2500 RPM	Start centrifuging since preselected temperature is reached.	START DELAY / OF TEMP.
		<ul style="list-style-type: none">With ▲▼ keys select START DELAY. Press SET.With ▲▼ keys select OF TEMP. Press SET.With ◀▶ keys select temperature zone.With ▲▼ keys set demanded value.
		<ul style="list-style-type: none">When START DELAY – OF TEMPERATURE is turned on,  symbol is visible on the screen.  /  (blinking) symbols means that temperature is increasing / decreasing.
When function is active, rotor is rotating with 2500rpm or lower (in order of fast temperature reaching).		
START DELAY / OF TEMP. function cannot be run when START DELAY / OF TIME is activated.		

8.8 Errors

End of centrifuging – manual mode	
	Centrifuging may be stopped at the any moment with the STOP key. The information message will be displayed.
End of centrifuging – normal mode	
	Stopping centrifuging in accordance with the set time causes generating 3 short audible signals (after stopping the rotor) and displaying the message.
Additional messages	
	In case of power shortage while centrifuging, after repeated switching it on, the following error screen will be displayed.
	<p>After operating for 2000 hours, after every switching on the centrifuge the error screen is being displayed with information about the necessity to carry out servicing activities.</p> <p>After pressing the SET key, the device proceeds to the main screen and the device may operate.</p>
	Identified number of the installed rotor. If the rotor is unknown the "--?--" sign is being displayed.
	Decelarating.
After pressing SET or STOP, the device returns to the main screen.	

Other messages	An irregularity in operations of the centrifuge is signalled by displaying a screen with relevant message (a sound signal is also emitted).
<pre> ===== SPEED OF ROTOR IDENTIFICATION <> 90 RPM ===== "SPEED OF ROTOR " "IDENTIFICATION <> 90 RPM" ===== UNBALANCE DETECTED ===== "IMBALANCE FAST STOP !" "PLEASE REMOVE CAUSE" "THEN RESTART" ===== ERROR OF ROTOR IDENTIFICATION {LIMIT OF 6SEC. IS OVER} ===== "NO ROTOR OR IDENTIFICATION" "SENSOR DAMAGED !" ===== ROTOR'S IDNOT CORRECT ===== "INCORRECT ROTOR NUMBER !" ===== WRONG DIRECTION OF ROTATION / UNKNOWN ROTOR ===== "WRONG DIRECTION OF ROTATION" "OR UNKNOWN ROTOR !" ===== CLOSING THE LID MANUALLY ===== "PLEASE CLOSE THE LID" "HAND !" ===== INITIALIZING AFTER MAINS FAILURE WITH ROTATING ROTOR ===== "ROTOR STOPPING !" "Please wait..." ===== CENTRIFUGING ENDED BECAUSE OF PRESSING STOP ===== " CYCLE'S ABORTED !" ===== CENTRIFUGING ENDED {WITROUT ERRORS} ===== " CYCLE'S FINISHED" </pre>	

Emergency messages	In case of emergency messages (centrifuge is not working properly) contact the manufacturer's authorized service center.
<pre> ===== INVERTET ERROR, INVERTER NOT READY {BETRIEBSBEREIT=1} ===== "OVERHEATING MOTOR !" "INVERTER ERROR !" "ERROR=" ; Error code ===== COMMUNICATION ERROR CONTROLLER - INVERTER {BLOK 1} ===== "INVERTER SERIAL BUS ERROR !" "ERROR=" ; Error code ===== TEMP. METER ERROR: DS18B20 ===== "TEMPERATURE SENSOR ERROR" "ERROR=" ; Error code ===== PRESSURE REGULATOR ERROR ===== "PRESSURE CONTROL FAILURE!" ===== COVER OPENED DURING RUN ===== "OPENING COVER in RUN!" ===== SPEED METER ERROR {NO IMPULSES } ===== "SPEED METER ERROR" ===== SEQUENCE OF 3 I2C TRANSMISSIONS FAULT; ===== "I2C BUS ERROR" "ERROR=" ; Error code ===== CENTRIFUGE OVERHEATED; CENTRIFUGE TEMPERATURE >= +50/+65 oC ===== "OVERHEATING CENTRIFUGE !" "Temp.= +"; _overheating_temp._off ; " oC" ===== 'V>VOGR_ROTOR ; ROTOR OVERSPEED {VOGR_ROTOR=VMAX_ROTOR+DELTA_VMAX} ===== "ROTOR OVERSPEED !" ===== COVER LOCK FAILURE ===== "COVER LOCK MALFUNCTION !" ===== SERVICE NEEDED; TIME {2000 HOURS} ===== "WORKING 2000 HOURS:" "CALL SERVICE FOR" </pre>	

8.9 *Temporarily disabled functions*

Functions written below can be temporarily disabled.

	SPEED	RCF	TIME	TEMP	PROG —	—— / ——	PARAM
THERMAL CHAMBER	●	●	●	○	●	●	●

During run

	SPEED	RCF	TIME	TEMP	PROG —	—— / ——	PARAM
PROG 99	○	○	○	○	○	○	○
ACC/DEC 10-19	○	○	●	●	○	○	●

Standstill

	SPEED	RCF	TIME	TEMP	PROG —	—— / ——	PARAM
PROG 99	○	○	○	○	●	○	○
ACC/DEC 10-19	○	○	●	●	●	○	●

- available
- disabled

8.10 *Unbalance*

The centrifuge is provided with the rotor unbalance sensor and when it will be activated, centrifugation process will be stopped through fast braking and at the same time an error message will be displayed. Cancellation of this error is possible only through pressing **COVER** key after stopping of the rotor.

One must check if rotor was correctly loaded, close the cover and once more start the program. In order to protect the rotor against beating in opposite areas of the rotor, it has to be provided with identically filled buckets, carriers, test-tubes etc. for getting the best balance possible.



Unbalance causes noise and vibrations during operation, and adversely affects power transmission system (motor, shock absorbers). The better balance, the smoother will be the centrifuge operation and therefore longer life of usage of the driveline. Moreover, the ideal separation level is then obtained, as already separated constituents would not be moved up by vibration.

Emergency stop


In any moment of centrifuging it is possible interrupt the process and fast stop the rotor. Single-time pressing of the STOP key will make centrifuging stop with acceleration characteristics set in the program (after pressing the SET or STOP key, the device returns to the main screen). Pressing and holding it up to 1s will make the centrifuging stop with the most strict characteristic.

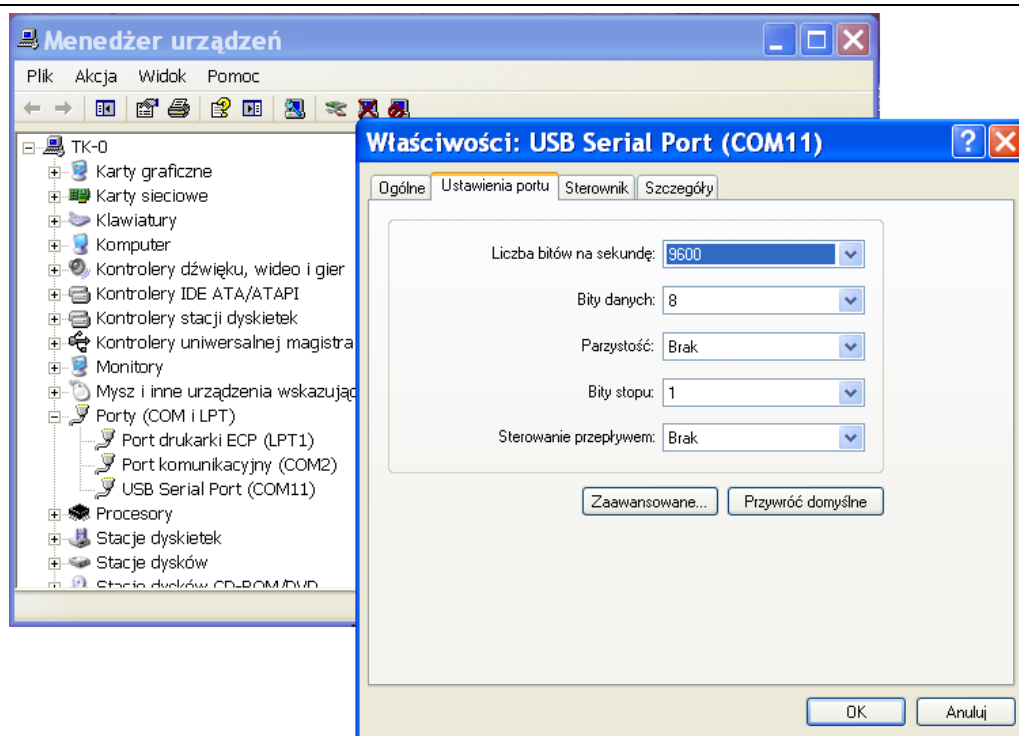
8.11 *Printing report - USB*

When the centrifuging process is finished there is a possibility to obtain report. Report can be transferred to PC or printed. Devices that offer printing reports are available optionally and they are not delivered with every centrifuge.

PC (USB)

name	quantity (pcs.)	cat. no.
USB A-A cable	1	16598
CD (MPW Editor application + FTDI USB drivers)	1	

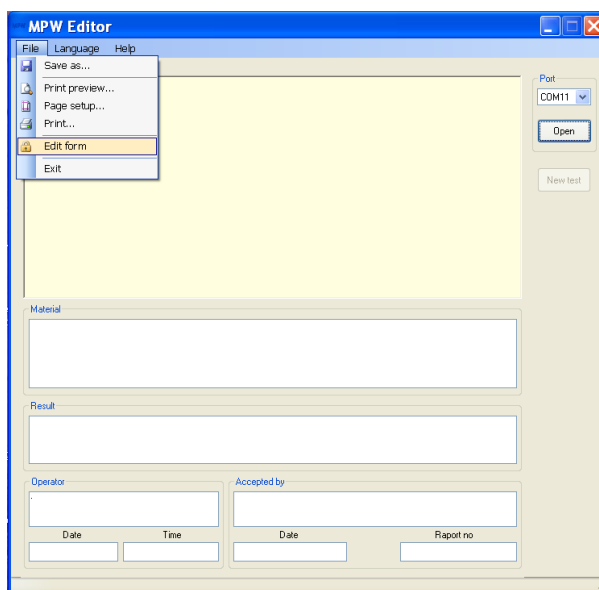
 USB	<p>Preparation</p> <ul style="list-style-type: none"> ▪ Connect centrifuge to the PC with the USB A-A cable (connection diagram is given below). ▪ if necessary install FTDI USB drivers (for details see attached CD). ▪ Ensure that virtual serial port COM (USB Serial Port) settings are set as described below (run control panel/system/ device manager): <ul style="list-style-type: none"> ▪ Baud rate = 9600 ▪ Data length = 8 ▪ Parity = none ▪ Stop bite = 1 ▪ Flow control = none
--	---



- Install MPW Editor application (Windows) delivered on CD.

Centrifuging and printing report

- Run **MPW Editor** application.
- Choose **Język\English**
- Choose **COM** port assigned to the centrifuge (it will appear after connecting USB cable, e.g. COM11).
- Choose **File\Edit form**



- Fill individual folds (**optionally**).
- In the folds with explanatory caption „Tytuł (Title)”, there is a possibility to paste form system clipboard any picture (e.g. company logo).

MPW Editor

File Language Help

Tytuł (Title)

Port
COM11

Open

New test

Material
Próbka (Sample)

Result
Wynik (Result)

Operator
Wykonał (Examined by)

Accepted by
Zaakceptowane (Approved by)

Date Time

Date Raport no
123456

- Choose **File\Save form**
- Choose **Open**

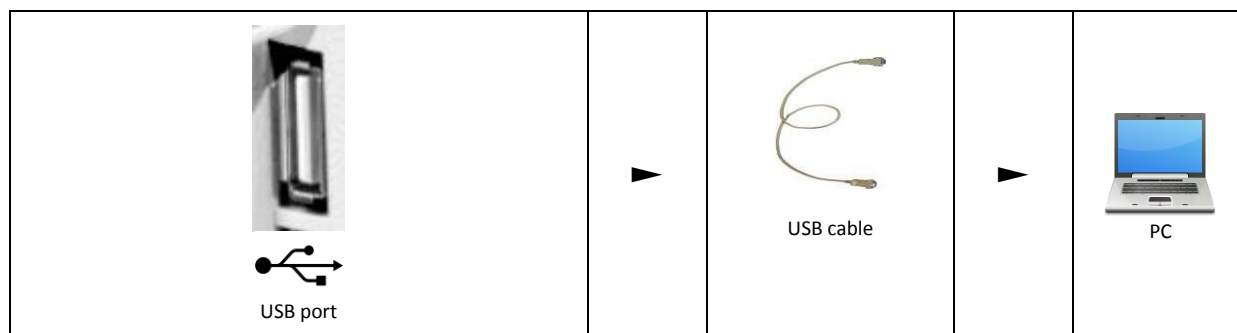
- Start centrifuging.
- When centrifuging process is completed, report will appear. Save report (File/Save us or print it (File/Print)).
- In order to get another report, press **New test**.

Connection diagram



CENTRIFUGE (left-bottom corner)



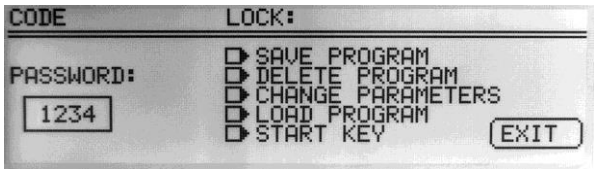
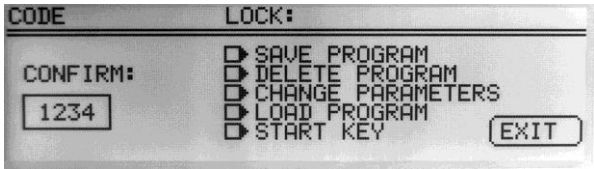
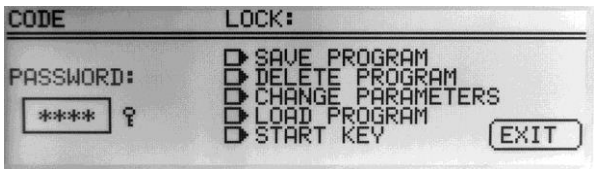
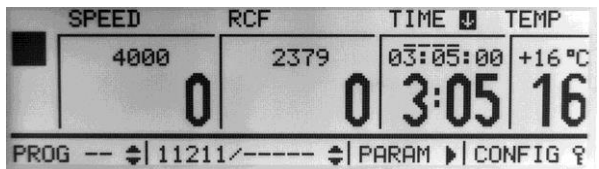



9 Configuration

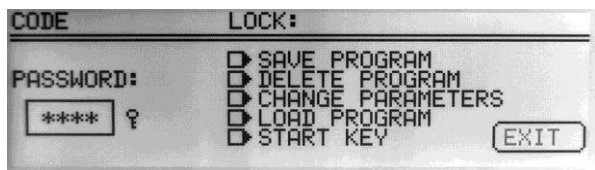
	<ul style="list-style-type: none"> Press SET. With ▲▼◀▶ keys select CONFIG menu. Press SET.
	<ul style="list-style-type: none"> To navigate in CONFIG use ▲▼◀▶ keys. To enter CONFIG menu press SET.

CODE	password protection
LANGUAGE	menu language
SCREEN	main screen modes
TIME/DATE	time and date settings
CYCLES	total working time, working cycles counter
ROTATING TIME	counting time mode
BUZZER	system sounds
SENSOR	error codes
RESET	restore factory settings
CURVES	user characteristics (ACC, DEC)
ROT. RUNTIME	total running time
10-CYCLES	10 last centrifugation cycles history
CONTACT US	manufacturer's details



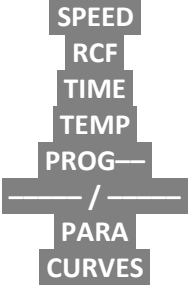


9.1 Password protection

Setting up password	CONFIG / PASSWORD
<p>To prevent from an unauthorized use, a PASSWORD can be set.</p> <p>Note: No PASSWORD is set by default.</p> <p>The PASSWORD can be set as follows when the rotor is at a standstill.</p>	
	<ul style="list-style-type: none"> Press the ◀▶ keys until “PASSWORD:” blinks. Press SET. With ◀▶ keys set the valid 1000s place of the PASSWORD. e.g.: 1xxx. With ▲▼ keys set correct value. Repeat above steps for all places. Press SET.
	<ul style="list-style-type: none"> As a confirmation repeat instructions described above.
<p>When the PASSWORD is set, the Key sign is displayed in the CODE zone. It is also displayed in the main menu (lower right corner of the screen).</p>	
	
<p>From this moment CONFIG menu is protected.</p>	
	
<p>To delete the PASSWORD, “0000” must be set.</p> <p>If the PASSWORD is forgotten, the emergency code “7654” should be used to clear password and remove all locks.</p>	

Setting up locks




- With ▲▼ keys choose a lock.
- Mark a lock by pressing **SET**.
- Repeat above steps for desired locks.
- Leave menu with **BACK** key.

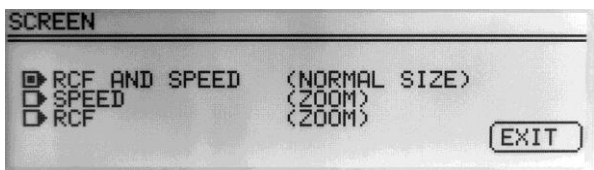
	DISABLED	description
SAVE PROGRAM	 button	<ul style="list-style-type: none"> ▪ no programs can be saved ▪ acceleration characteristics can not be saved ▪ deceleration characteristics can not be saved
DELETE PROGRAM	 button	<ul style="list-style-type: none"> ▪ no programs can be deleted ▪ saving programs on position where one was already stored is disabled
CHANGE PARAMETERS		<ul style="list-style-type: none"> ▪ parameters can not be modified
LOAD PROGRAM	 button	<ul style="list-style-type: none"> ▪ no programs can be called up
START KEY	 key	<ul style="list-style-type: none"> ▪ centrifugation can not be started

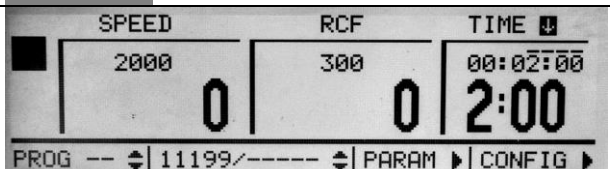
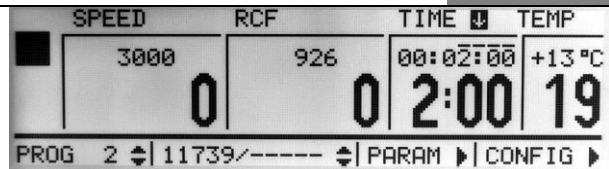
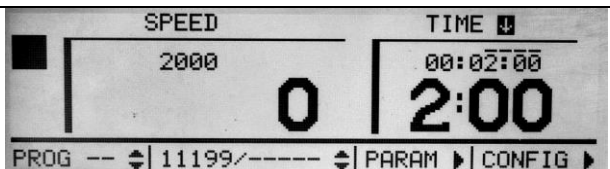

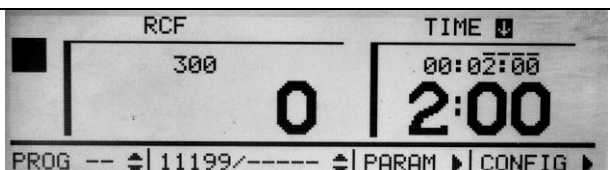

* Executing disabled procedures is only possible after entering the correct

9.2 *Language*

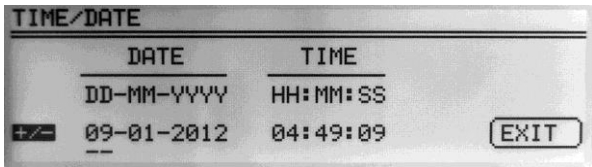
Choosing menu language.	CONFIG / LANGUAGE
	<ul style="list-style-type: none"> With ▲▼ keys select demanded option. Mark selection by pressing SET.

9.3 *Main screen modes*

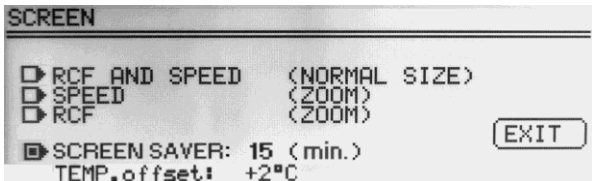
Choosing main screen mode.	CONFIG / SCREEN
	<ul style="list-style-type: none"> With ▲▼ keys select demanded option. Mark selection by pressing SET.

MPW-380	MPW-380R
	
SPEED and RCF	
	
SPEED only	
	
RCF only	

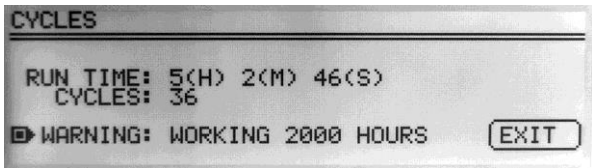
9.4 Time/date


Setting the time and date.	CONFIG / TIME/DATE
	<ul style="list-style-type: none"> With ▲▼ keys select demanded option. Mark selection by pressing SET. With ▲▼ keys select DATE TIME (blinking). Press SET. With ◀▶ keys place __ under demanded value. Press SET. With ▲▼ keys change selected value. Accept changes by pressing SET. Repeat above steps for other values. Choose EXIT.

9.5 Screensaver

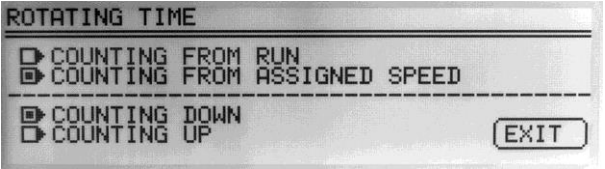
Setting time of screen saver	CONFIG / SCREEN
	<ul style="list-style-type: none"> To activate screen saver setting, select screen saver option and press ▶ With ▲▼ keys select demanded value from 1 to 60 minutes. Mark selection by pressing SET.

9.6 Total working time

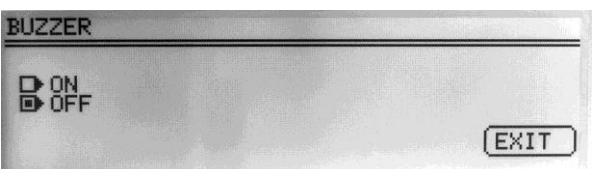
Total working time of centrifuge	CONFIG / CYCLES
	<p>In the CYCLES menu the following statistics are displayed:</p> <ul style="list-style-type: none"> total working (centrifugation) time working cycles counter <p>When the total working time is greater than 2000h, the warning splash screen will be displayed every time the centrifuge is switched on. In case the centrifuge should be examined by the manufacturer's service.</p> <p>Warning message can be disabled. In order to it</p>

	<p>follow the instructions below:</p> <ul style="list-style-type: none"> ▪ With ▲▼ keys choose WARNING: WORKING 2000 HOURS. ▪ Press SET until  disappears. ▪ Choose EXIT. <p>The CYCLE WARNING MESSAGE is turned on by default.</p>
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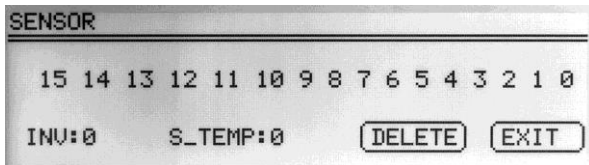
9.7 Rotating time

Counting time mode	CONFIG / ROTATING TIME
	<ul style="list-style-type: none"> With ▲▼ keys select demanded option. Mark selection by pressing SET.
Counting since: <ul style="list-style-type: none"> START key is pressed COUNTING SINCE ROTOR IS IDENTIFIED preselected speed is reached COUNTING FROM ASSIGNED SPEED 	
Presenting mode: <ul style="list-style-type: none"> remaining time COUNTING DOWN left time COUNTING UP 	

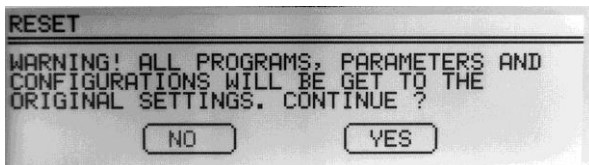
9.8 Sounds

Switching ON/OFF short audible signals accompanying every pressing of any key.	CONFIG / SOUNDS
	<ul style="list-style-type: none"> With ▲▼ keys select demanded option. Mark selection by pressing SET.
Warning signals connected with error occurrence, cannot be switched off.	

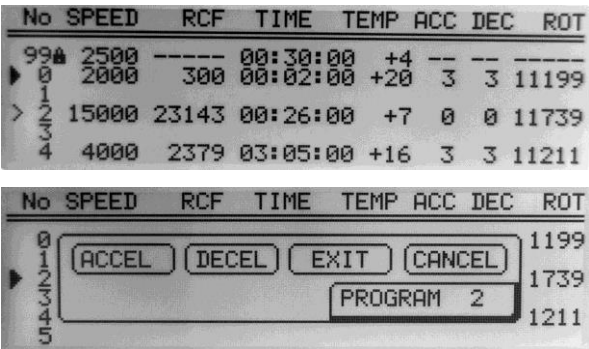
9.9 Error codes

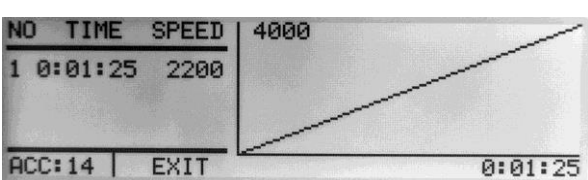
Information about errors arisen in working of the centrifuge.	CONFIG / SENSOR
Intended for service purposes!	
	<ul style="list-style-type: none"> ▪ In any moment, it is possible to delete the contents of the fold. ▪ For this purpose, choose DELETE button (blinking when marked) and confirm by pressing SET key.

9.10 Factory settings

Restoring factory settings.	CONFIG / RESET
All menu settings will be restored to its original values.	
	<ul style="list-style-type: none"> ▪ With ▲ ▼ keys select YES or NO. ▪ Confirm by pressing SET.

9.11 User characteristics ACCEL/DECEL

User acceleration/deceleration characteristics	CONFIG / CURVES
 <p>The screenshot shows a table with columns: No, SPEED, RCF, TIME, TEMP, ACC, DEC, ROT. It lists four characteristics. Below the table is a menu with options: ACCEL, DECEL, EXIT, CANCEL, and PROGRAM 2.</p>	<ul style="list-style-type: none"> Choose the program by pressing ▲▼ keys. Press SET. To edit acceleration characteristic choose ACCEL (by pressing ◀▶). Confirm selection by pressing SET.

Acceleration characteristic	CONFIG / CURVES / ACCEL	
After choosing CONFIG → CURVES → ACCEL the window of the characteristics wizard will be displayed: Current acceleration characteristic connected with the loaded program will be displayed on the screen.		
	NO.	section no. (max. 4)
	TIME	total acceleration time
	SPEED	final RPM
	ACC:11	characteristic's no. (10-19)

In the first moment, the EXIT field is marked (the message is blinking). Pressing the SET key will cause returning to the CONFIG / CURVES fold, without making changes in the acceleration characteristics.

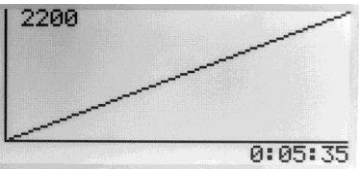
„1” SECTION

After setting the time the device will proceed to setting the speed of the given section of characteristics (only the set value SPEED blinks). With UP and DOWN keys one should set the speed value and press the SET key.

The set speed value is limited by the maximum speed of the rotor connected with the edited program. After the end of programming the speed, the graphical displaying of the section (of all sections) will occur TIME+SPEED of the user's acceleration characteristics.

After programming the section 1, there is a possibility to program the next section, number 2:

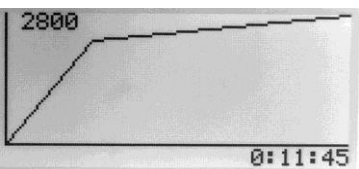
„2” SECTION

NO	TIME	SPEED	2200
1	0:01:25	2200	
2	0:04:10	2800	
ACC:14 EXIT			0:05:35

Programming of new section possible (the whole line 2 is blinking). Programming as in the case of section 1. It is possible also to abandon the programming: with UP/DOWN keys choose the EXIT option (it will blink) and save (press the SET) only the acceleration characteristics of 1 section with TIME/SPEED parameters described in the line 1.

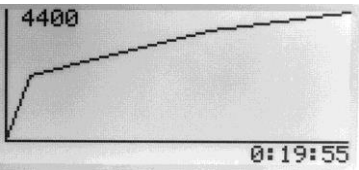
The minimal speed of the next section of acceleration characteristics is equal to the speed of the already programmed previous section.

„3” SECTION

NO	TIME	SPEED	2800
1	0:01:25	2200	
2	0:04:10	2800	
3	0:06:10	3700	
ACC:14		EXIT	0:11:45

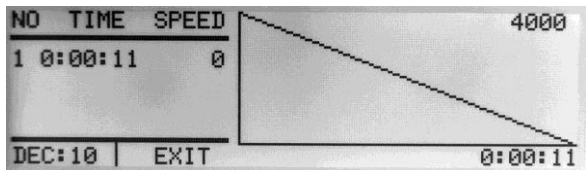
Programming of new section possible (the whole line 3 is blinking). Programming as in the case of section 1. It is possible also to abandon the programming: with UP/DOWN keys choose the EXIT option (it will blink) and save (press the SET) only the acceleration characteristics of 2 section with TIME/SPEED parameters described in the line 1 and 2.

„4” SECTION

<table><tr><th>NO</th><th>TIME</th><th>SPEED</th></tr><tr><td>1</td><td>0:01:25</td><td>2200</td></tr><tr><td>2</td><td>0:04:10</td><td>2800</td></tr><tr><td>3</td><td>0:06:10</td><td>3700</td></tr><tr><td>4</td><td>0:08:10</td><td>4400</td></tr></table>			NO	TIME	SPEED	1	0:01:25	2200	2	0:04:10	2800	3	0:06:10	3700	4	0:08:10	4400	<div>4400</div> 	
NO	TIME	SPEED																	
1	0:01:25	2200																	
2	0:04:10	2800																	
3	0:06:10	3700																	
4	0:08:10	4400																	
ACC:14			0:19:55																

Programming of new section possible (the whole line 4 is blinking). Programming as in the case of section 1. It is possible also to abandon the programming: with UP/DOWN keys choose the EXIT option (it will blink) and save (press the SET) only the acceleration characteristics of 3 section with TIME/SPEED parameters described in the line 1, 2 and 3.

Repeated attempt to program already programmed sections of the acceleration characteristics will cause beginning of programming of the whole acceleration characteristics once again (with settings of the program loaded to edition).

Deceleration characteristic	CONFIG / CURVES / DECEL	
After choosing CONFIG → CURVES → DECEL the window of the characteristics wizard will be displayed: Default deceleration characteristics connected with the loaded program will be displayed on the screen. Creating of deceleration characteristics takes place a little differently than acceleration characteristics.		
	NO.	section no. (max. 4)
	TIME	total acceleration time
	SPEED	final RPM
	DEC:11	characteristic's no. (10-19)

In the first moment, the EXIT field is marked (the message is blinking). Pressing the SET key will cause returning to the CONFIG / CURVES fold, without making changes in the deceleration characteristics.

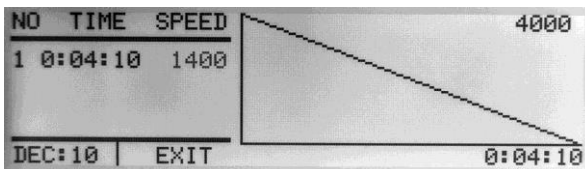
„1” SECTION

To edit the deceleration characteristics, one should mark the section of characteristics with UP or DOWN key (the whole TIME+SPEED line will begin to blink; at this stage, it is only one section, with the number 1) and then press the SET key. The device will proceed to setting the characteristics' section time (only the set TIME value is blinking). With UP and DOWN keys, one should set the required time value and press the SET key.

In order to complete the creation of the deceleration curve it is necessary for the speed of the last of programmed sections of the curve to be equal = 0. Otherwise the curves wizard will not enable the end of programming (it will be impossible to select the EXIT option).

After programming the section 1, there is a possibility to program the next section, number 2:

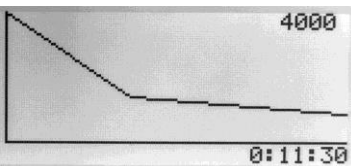
„2” SECTION

	<p>New section programming possible (the whole line 2 is blinking). Programming as in the case of the section 1. To stop creating the deceleration curve at the stage of two sections, it is necessary to set the speed in section 2 to 0 and press the SET key.</p>
---	--

The maximum speed of the next section of deceleration characteristic is equal to the speed programmed already of the previous section.

„3” SECTION

NO	TIME	SPEED
1	0:04:10	1400
2	0:07:20	900
3	0:00:00	0



DEC:10 | EXIT

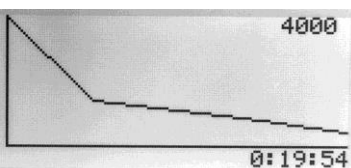
0:11:30

New section programming possible (the whole line 3 is blinking). Programming as in the case of the section 1. To stop creating the deceleration curve at the stage of three sections, it is necessary to set the speed in section 3 to 0 and press the SET key.

„4” SECTION

NO	TIME	SPEED
1	0:04:10	1400
2	0:07:20	900
3	0:05:10	500
4	0:03:14	300

DEC:10	EXIT
--------	------



4000

0:19:54

New section programming possible (the whole line 4 is blinking). Programming as in the case of the section 1. If speed of the last section=0, it is possible to save the created characteristics by choosing the EXIT option with UP/DOWN keys and pressing the SET key.

Repeated attempt to program already programmed sections of the acceleration characteristics will cause beginning of programming of the whole deceleration characteristics once again (with settings of the program loaded to edition).

NO	TIME	SPEED	2110
1	0		
2	0		
3	0		
ACC	1		0:22

LOAD NEW CURVES ?

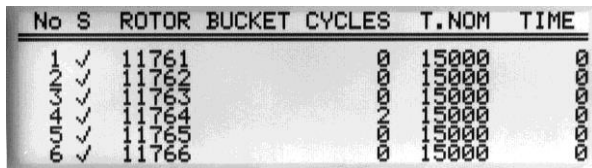
YES

NO

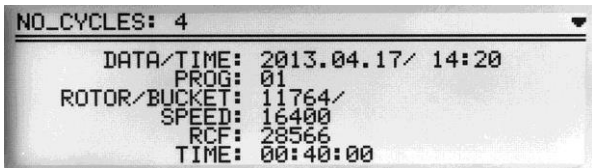
PROGRAM: 1

In case of continuing work with currently loaded program with new user characteristics, user should choose YES (to load new characteristics).


9.12 Rotor runtime

Information about the time of centrifuging and of the quantity of the working cycles of each rotor.	CONFIG / ROT. RUNTIME
	<ul style="list-style-type: none">▪ The list can be scrolled using ▲ ▼ keys.▪ To exit press SET/BACK key. <p>The table also contains icons warning of the duty of execution of validation.</p> <ul style="list-style-type: none">✓ – more than 100 cycles left⚠ – less than 100 cycles left❗ – worn rotor

9.13 Cycles history



Information concerning parameters of ten last centrifuging cycles.	CONFIG / 10-CYCLES
 <pre> NO_CYCLES: 4 DATA/TIME: 2013.04.17/ 14:20 PROG: 01 ROTOR/BUCKET: 11764/ SPEED: 16400 RCF: 28566 TIME: 00:40:00 </pre>	<ul style="list-style-type: none"> Number of cycle can be changed by ◀ ▶ keys. The list can be scrolled using ▲ ▼ keys. To exit press SET/BACK key.

9.14 Manufacturer's details


Information about the type of the centrifuge, firmware version, and contact details.	CONFIG / CONTACT US
 <pre> INFO MPW-380R v.7.5.7.8 MPW MED. INSTRUMENTS 04-347 WARSAW 46 BOREMLOWSKA St WWW.MPW.PL , MPW@MPW.PL SALES DEPOT: </pre>	<ul style="list-style-type: none"> The list can be scrolled using ▲ ▼ keys. To exit press SET/BACK key.

10 Maintenance


10.1 *Cleaning of the centrifuge*

	<ul style="list-style-type: none"> ▪ For cleaning, water with soap or other water soluble mild detergent shall be used. One should avoid corrosive and aggressive substances. ▪ It is prohibited to use alkaline solutions, inflammable solvents or agents containing abrasive particles. ▪ Using wiping cloth, remove condensate or residues of the products from the rotor chamber. It is recommended to keep the cover opened when the centrifuge does not work in order to expel the moisture.
	<ul style="list-style-type: none"> ▪ In case the user decides to use centrifuge and equipment cleaning methods other than the ones described in this manual, the user shall contact the device manufacturer in order to check whether the cleaning method chosen does not damage the device.

10.2 *Maintenance of centrifuge elements*


	<ul style="list-style-type: none"> ▪ The rotor pins shall be always lubricated with technical petroleum jelly. ▪ In this way, the uniform deflection of the buckets and quiet centrifuge operation is ensured.
---	--

Cleaning of the accessories

	<ul style="list-style-type: none"> ▪ In order to ensure safe operation one shall carry out in regular way periodical maintenance of the accessories. ▪ Rotors, buckets and round carriers have to withstand steady high stresses originating from the field of gravitation. Chemical reactions as well as corrosion (combination of variable pressure and chemical reactions) can cause corrosion or destruction of metals. Hard to observe surface cracks increase gradually and weaken material without visible symptoms. ▪ In case of observation of surface damage, crevice or other change, as well as the corrosion, the given part (rotor, bucket, etc.) shall be immediately replaced. ▪ In order to prevent corrosion one has to clean regularly the rotor with the fastening bolt, buckets and round carriers. ▪ Cleaning of the accessories shall be carried out outside of the centrifuge once every week or still better after each use. ▪ Then, those parts shall be dried using soft fabric or in the chamber drier at ca.
---	---

	<p>50°C.</p> <ul style="list-style-type: none"> ▪ Especially prone to the corrosion are parts made of aluminium. For cleaning them one should use neutral agent of pH value 6÷8. ▪ It is forbidden to use alkaline agent of pH > 8. ▪ In this way, the useful service life of the device is substantially increased and susceptibility to corrosion is diminished. ▪ Accurate maintenance increases the service life as well and protects against premature rotor failures. ▪ Corrosion and damages resulting from insufficient maintenance could not be subject of claims lodged against the manufacturer.
--	---

Lubrication

	<ul style="list-style-type: none"> ▪ The rotor pins shall be always lubricated with technical petroleum jelly. ▪ In this way, the uniform deflection of the buckets and quiet centrifuge operation is ensured. ▪ HS accessories maintenance. ▪ Make sure that rubber O-rings are lightly coated with silicone grease. Use high vacuum grease, e.g. type „C” by LUBRINA.
---	---

10.3 Sterilization

One can use all standard disinfectants. The centrifuges and accessories are constructed from various materials and one should to take into account possible variety of materials. During sterilization by means of steam one should to consider temperature resistance of individual materials.

STERILIZATION

	sterilization *	radiation β radiation γ	C ₂ H ₄ O (ethylene oxide)	formalin, ethanol
	121 °C, 20 min	25 kGy		
PS	○	●	○	●
SAN	○	○	●	●
PMMA	○	●	○	●
PC	● ¹⁾	●	●	●
PVC	○ ²⁾	○	●	●
POM	● ¹⁾	●	●	●
PE-LD	○	●	●	●
PE-HD	○	●	●	●
PP	●	●	●	●
PMP	●	●	●	●
ECTFE ETFE	●	○	●	●
PTFE	●	○	●	●
FEP/PFA	●	○	●	●

FKM	●	○	●	●
EPDM	●	○	●	●
NR	○	○	●	●
SI	●	○	●	●

● may be used

○ cannot be used

* Laboratory vessels have to be exactly cleaned and rinsed with the distilled water before the sterilization in the autoclave. It is always necessary to remove closures from containers!

1) The frequent steam sterilization reduces mechanical durability! PC test tubes may become useless.

2) Except PVC hoses which are resistant to the steam sterilization in the temperature 121°C

Chemical resistance of plastics

	aldehydes	cyclic alcohols	esters	ether	ketones	strong or concentrated acids	weak or diluted acids	oxidizing substances	cyclic hydrocarbons	ahs	haloid hydrocarbons	alkalis
PS	○	●	○	○	○	○/●	○/●	○	○	○	○	●
SAN	○	●	○	○	○	○	○/●	○	○	○	○	●
PMMA	○/●	●	○	○	○	○	○/●	○	○/●	○	○	○
PC	○/●	●	○	○	○	○	○/●	○	○/●	○	○	○
PVC	○	●	○	○	○	●	●	○	●	○	○	●
POM	○/●	●	○	●	●	○	○	○	●	●	●	●
PE-LD		●	●	●	○/●	●	●	○	●	●	●	●
PE-HD	●	●	○/●	○/●	○/●	●	●	○	●	○/●	○/●	●
PP	●	●	○/●	○/●	○/●	●	●	○	●	○/●	○/●	●
PMP	○/●	●	○/●		○/●	●	●	○	○/●	○	○	●
ECTFE	●	●	●	●	○	●	●	●	●	●	●	●
ETFE	●	●	●	●	○	●	●	●	●	●	●	●
PTFE	●	●	●	●	●	●	●	●	●	●	●	●
FEP	●	●	●	●	●	●	●	●	●	●	●	●
PFA	●	●	●	●	●	●	●	●	●	●	●	●
FKM	●	○	○	○	○	○	●	○/●	○/●	○/●	○/●	○/●
EPDM	●	●	○/●	○	○/●	●	●	○/●	○	○	○	●
NR	○/●	●	○/●	○	○	○	○/●	○	○	○	○	●
SI	○/●	●	○/●	○	○	○	○/●	○	○	○	○	○/●

●	very good	Permanent action of the substance does not cause damage through 30 days. The material is able to be resistant through years
○/●	good to limited	Continuous action of the substance causes insignificant and partly reversible damage through the period of 7-30 days (e.g. puffing up, softening, reduced mechanical durability, discolouring).
○	limited	The material should not have the continuous contact with the substance. The immediate occurrence of damage is possible (e.g. the loss of mechanical durability, deformation, discolouring, bursting, dissolving).

Plastics

PS	polystyrene	ECTFE	ethylene/chlorotrifluoroethylene
SAN	styrene-acrylonitrile	ETFE	ethylene/tetrafluoroethylene
PMMA	polymethyl methacrylate	PTFE	polytetrafluoroethylene
PC	polycarbonate	FEP	tetrafluoroethylene/perfluoropropylene
PVC	polyvinyl chloride	PFA	tetrafluoroethylene/perfluoroalkylvinylether
POM	acetal polyoxymethylenel	FKM	fluorcarbon rubber
PE-LD	low density polyethylene	EPDM	ethylene propylene diene
PE-HD	high density polyethylene	NR	natural rubber
PP	polypropylene	SI	silicon rubber
PMP	polymethylpentene		



DANGER!

For centrifuging infectious materials it is necessary to use hermetically closed buckets, in order to prevent they migration into the centrifuge.

Rotors, buckets and round carriers can be sterilized in autoclave with temperature 121 – 124°C and pressure 215 kPa during 20 min. In the centrifuge, disinfectants and cleaning agents generally used in medical care should be used (e.g. Aerodesina-2000, Lysoformin 3000, Melseptol, Melsept SF, Sanepidex, Cutasept F).

Additional accessories can be sterilized using autoclave depending on material that they are made of. See table STERILIZATION.



User is responsible for proper disinfections of the centrifuge, if some dangerous material was spilled inside or outside of the centrifuge. During the above mentioned works one must wear safety gloves.

10.4 Chemical resistance

One can use all standard disinfectants. The centrifuges and accessories are constructed from various materials and one should to take into account possible variety of materials. During sterilization by means of steam one should to consider temperature resistance of individual materials.



DANGER!








For centrifuging infectious materials it is necessary to use hermetically closed buckets, in order to prevent they migration into the centrifuge.



User is responsible for proper disinfections of the centrifuge, if some dangerous material was spilled inside or outside of the centrifuge. During the above mentioned works one must wear safety gloves.

11 Troubleshooting

Majority of faults could be removed by switching the centrifuge OFF and then ON. After switching the centrifuge ON, there shall be displayed parameters of the recently implemented program and sound signals comprising four successive tones shall be generated. In case of short-duration power failure the centrifuge terminates the cycle and displays PROGRAM ERROR code.

problem	question	remedy
Centrifuge does not start	<i>Is supply cable plugged into mains?</i>	<i>Plugs supply cable correctly.</i>
	<i>Is master switch ON?</i>	<i>Switch ON power supply.</i>
Motor error is displayed		Call service.
Centrifuge does not start (indications are proof for cycle in progress and motor does not start)	<i>Is  symbol displayed?</i>	Wait till rotor stops and the  symbol goes off.
	<i>Is  symbol displayed?</i>	Close cover.  symbol must switch off.
	<i>Is  symbol blinking?</i>	Centrifugation cycle in progress, press STOP key or wait till cycle ends.
Centrifuge does not accelerate (unbalance error)	<i>Unequal rotor load.</i>	Centrifuge load shall be balanced.
	<i>Inclined centrifuge.</i>	Centrifuge shall be levelled.
	<i>Faulty drive (mechanical damage).</i>	Call service.
	<i>Was centrifuge displaced during operation.</i>	Switch ON the centrifuge again after opening and closing the cover.
(motor error)	<i>After stopping error rotor message is displayed</i>	Check if rotor number in started program is consistent with the number of the rotor installed in the centrifuge. Check rotor status (if there are coding magnets inserted)
	<i>Centrifuge does not recognize the rotor and does not stop.</i>	Switch the centrifuge OFF, then ON and check correctness of loaded program
It is not possible to open the cover	<i> symbol on the display is blinking, after pressing COVER key single tone is audible</i>	Rotor is still rotating. Wait for stopping of the rotor and displaying of the  symbol.
	<i>The sensor is connected correctly, and the error is still applying.</i>	Call service.
Mains failure during run	<i>The message will be displayed on the display about the decay of tension.</i>	Wait for stopping of the rotor, clear the error by pressing the SET key.
Temperature sensor error	<i>The overheating message will be displayed.</i>	Switch the centrifuge OFF, then ON.
		Call service.
Error of the exceeding the temperature (50°C) in the chamber	<i>The overheating message will be displayed.</i>	Call service.



EMERGENCY COVER RELEASE

In case of e.g. mains failure it is possible to open cover manually. At first, one must be sure that rotor is not in the move (use inspection glass). On the front side of the casing there is a lock. Insert emergency opening key (17999) into the lock and turn it counterclockwise.

The cover can be unlocked and opened only when the rotor is in the rest state.

12 Guarantee

Manufacturer grants to the Buyer the guarantee on conditions specified in the Guarantee Certificate. Buyer forfeits the right to guarantee repair when using the device inconsistently with the User manual provisions, when damage results from the User's fault.

Repairs should be carried out in authorized service workshops, granted with the MPW Certificate.

The centrifuge shall be sent to repair after decontaminating disinfections. Information about authorized service workshops could be obtained from the Manufacturer.

13 Disposal



- When you are disposing the device, the respective statutory rules must be observed.
- Pursuant to guideline 2002/96/EC (WEEE), all devices supplied after August 13, 2005, may not be disposed as part of domestic waste.
- The device belongs to 8th group (medical devices) and is categorized in business to business field.
- The icon of the crossed-out trash can shows that the device may not be disposed as part of domestic waste. The waste disposal guidelines of the individual EC countries might vary. If necessary, contact your supplier.

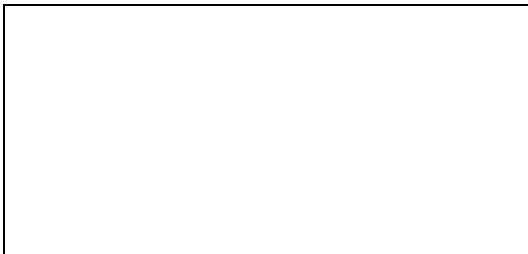
14 Manufacturer's info

MPW MED. INSTRUMENTS

+48 **22 610 56 67** sales department
22 610 81 07 service
22 610 55 36 fax

Boremlowska 46 Street
04-347 Warsaw

http:// www.mpw.pl
e-mail: mpw@mpw.pl

DISTRIBUTOR:


15 ANNEXES

WYPOSAŻENIE DODATKOWE OPTIONAL ACCESSORIES:

WIRNIKI KĄTOWE ANGLE ROTORS

nr kat.	rodzaj	kąt	pojemność	RPM	RCF	Rmax
cat. no	type	angle	capacity	(max)	(max)	[cm]
11761	kątowy HU / angle HS	45°	30 x 2,0/1,5 ml	16400	29168	9,7
11762	kątowy HU / angle HS	45°	36 x 2,0/1,5 ml	18000	30065	8,3
11763	kątowy HU / angle HS	45°	48 x 2,0/1,5 ml	16400	28265	9,4
11765	kątowy HU / angle HS	45°	12 x 8 x 0,2 ml PCR strip	16400	28566	9,5
11766	kątowy HU / angle HS	45°	12 x 10 ml/81 mm	18000	31150	8,6
11767	kątowy HU / angle HS	30°	12 x 10 ml/100 mm	14000	20598	9,4
11769	kątowy HU / angle HS	45°	60 x 2,0/1,5 ml	16400	29168	9,7
11770	kątowy HU / angle HS	30°	12 x 15 ml Falcon	14000	23227	10,6
11772	kątowy HU / angle HS	30°	8 x 30 ml Nalgene (25x98)	17500	29787	8,7
11773	kątowy HU / angle HS	30°	6 x 50 ml Nalgene (28x106)	14500	21625	9,2
11775	kątowy HU / angle HS	30°	8 x 50 ml Nalgene	14000	21255	9,7
11776	kątowy HU / angle HS	30°	8 x 50 ml Falcon	14000	23666	10,8
11777	kątowy HU / angle HS	25°	4 x 250 ml	10000	14086	12,6
11778	kątowy HU / angle HS	30°	6 x 94/85 ml Nalgene	12000	17710	11,0
11779	kątowy HU / angle HS	45°	36 x 2,0 ml Filtr/filter	15000	22136	8,8
11780	kątowy	30°	12 x 50 ml Falcon	4500	3328	14,7
11784	kątowy	30°	36 x 15 ml Falcon	5000	3996	14,3
11785	kątowy	30°	48 x 15 ml Falcon	4700	4025	16,3

HU – hermetycznie uszczelniony, **HS** – hermetically sealed

	<p>Konserwacja wyposażenia HU</p> <p>Należy dbać aby pierścienie uszczelniające (gumowe) były pokryte cienką warstwą smaru silikonowego (w celu utrzymania szczelności). Stosować smar silikonowy do próżni, np. typu "C" firmy LUBRINA (do wysokiej próżni).</p>	<p>HS accessories maintenance</p> <p>Make sure that rubber O-rings are lightly coated with silicone grease. Use high vacuum grease, e.g. type „C” by LUBRINA.</p>
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WIRNIKI HORYZONTALNE SWING-OUT ROTORS

nr kat.	rodzaj	kąt	pojemność	RPM	RCF	Rmax
cat. no	type	angle	capacity	(max)	(max)	[cm]
12768	bębnowy / drum rotor	-	6 kaset 20 x 0,4/0,2 ml lub/or 10 x 2,0/1,5ml	14500	16450	7,0
12786	horyzontalny / swing-out	-	4 x 250 ml	5000	4724	16,9
12787	titracyjny / MTP	-	2x5 MTP (standard) / MTP (deepwell)	4300	2398	11,6
12788	titracyjny / MTP	-	4x4 MTP (standard) / MTP (deepwell)	4000	2826	15,8
12791	horyzontalny / swing-out	-	4xASTM	2500	1292	18,5
12830*	horyzontalny / swing-out	-	4x400ml, (48x15ml Falcon, 20x50 ml Falcon, 8x100 ml)	4500	4188	18,5

* 4000 rpm, RCF = 3309 - MPW-380

POJEMNIKI BUCKETS

nr kat.	opis	na	pojemność	do wirnika
cat. no	description	for	capacity	for rotor
13080	Φ 17,7x87mm	próbówki / tubes	15/10/7/6ml	11784, 11785
13081	Φ 17,7x65	próbówki / tubes	10/6/5ml	11784, 11785
13174	okrągły / round Φ 62x107mm	butelki / bottles	250ml	12786
13178c	okrągły / round Φ 62x107mm	butelki / bottles	250ml	12786
13180	Φ 30x99mm	próbówki / tubes	2x50ml	12786
13275c	Φ 0x99mm	próbówki / tubes	50/30/25ml	11780
13276	Φ 30x96 mm	próbówki / tubes	50/30/25ml	11780
13286	85x130x60mm	MTP	1÷5MTP / 1 deepwell	12787
13580	Φ 45x116mm	próbówki / tubes	2x50ml szklane / glass	12786
13789	85x130x60mm	MTP	1÷4MTP / 1 deepwell	12788
13792c	-	ASTM	-	12791
13831c	prostokątny / rectangular	-	-	12830;
13833c	okrągły / round	-	400 ml	12830
13865	-	-	50ml	12830
13866	-	-	50ml	12830

WKŁADKI REDUKCYJNE INSERTS

nr kat.	opis / description	wymiary / dimensions
14000	20x0,4 ml	-
14002	10x2,2/1,5 ml	-
14017	Podkładka pod butelki / pad for bottle 250 ml okrągłodenne	-
14036	Φ 28,5 na probówkę / for tube 5 ml	Φ 13,5x92 mm
14043	Φ29 na probówkę / for tube 5 ml	13x85
14047	Φ 16,8 na probówkę / for tube 5 ml	13x85
14071	na probówkę / for tube 30 ml nr 15055	Φ 25x100 mm
14082	Φ17,6 na probówkę / for tube 7/5 ml	Φ 13,3x100 mm
14084	Φ 11,0 na probówkę / for tube 0,5 ml	Φ 8,0x30 mm;
14089	Φ29,0 na probówkę / for tube 15 ml Falcon	Φ 17x120 mm
14126	Φ11 na probówkę / for tube 0,4 ml	Φ 5,8x46 mm
14133	Φ10,8 na probówkę / for tube 0,2 ml	Φ 6,2x21 mm
14151	Φ61 na probówkę / for tube 1x100 ml	Φ 46x100 mm
14152	Φ61 na probówkę / for tube 1x50 ml Falcon	Φ 30x120 mm
14153	Φ61 na probówkę / for tube 5x15 ml Falcon	Φ 17/22x120 mm
14154	Φ61 na probówkę / for tube 9x 5 ml	Φ 13,5/17x81 mm
14155	Φ61 na probówkę / for tube 12x7/5 ml	Φ 13/14,5x100 mm
14156	Φ61 na probówkę / for tube 8x14/10 ml	Φ 17/17,7x113 mm
14157	Φ61 na probówkę / for tube 4x15 ml	Φ 17/22x120 mm
14158	Φ61 na probówkę / for tube 12x2,0 ml Eppendorf	Φ 11x43 mm
14159	Φ45 na probówkę / for tube 1x50 ml	Φ 35,5x100 mm
14160	Φ61 na probówkę / for tube 3x30/25ml	Φ 25,5x100mm
14175	Podkładka pod butelkę / pad for bottle 250ml płaskodenne / flat-bottom	-
14188	Podkładka pod probówkę / pad for bottle 100/50 ml	-
14248	Φ29,8 na probówkę / for tube 30/25 ml	Φ 26x100 mm
14793	83x95 mm na probówkę / for tube 13x15 ml Falcon	Φ 17x120 mm
14794	ASTM dł. / length 160 mm	dł. / length 160 mm
14795	ASTM dł. / length 167 mm	dł. / length 167 mm
14836	83x95 mm na probówkę / for tube 24x5 ml	Φ 13x75 mm
14837	83x95 mm na probówkę / for tube 16x10 ml Falcon	Φ 17x100 mm
14838	83x95 mm na probówkę / for tube 12x15 ml Falcon	Φ 17x120 mm
14839	83x95 mm na probówkę / for tube 8x30 ml	Φ 26x102 mm

14840	83x95 mm na probówkę / for tube 5x50 ml Falcon	Φ 30x120 mm
14841	83x95 mm na probówkę / for tube 2x100 ml	Φ 45x103 mm
14842	83x95 mm na butelki / for bottles 250 ml	Φ 62x135 mm
14844	83x95 mm na probówkę / for tube 26x2,0 ml	Φ 11x43 mm
14845	Φ 84 na probówkę / for tube 18x5 ml	Φ 13,5x75 mm
14846	Φ 84 na probówkę / for tube 12x10 ml	Φ 17x100 mm
14847	Φ 84 na probówkę / for tube 12x15 ml Falcon	Φ 17x120 mm
14848	Φ 84 na probówkę / for tube 5x30 ml	Φ 26x102 mm
14849	Φ 84 na probówkę / for tube 4x50ml	Φ 30x120mm
14850	Φ 84 na probówkę / for tube 100 ml	Φ 46x103 mm
14851	Φ 84 na butelki / for bottles 250 ml	Φ 62x135 mm
14853	Φ 84 na probówkę / for tube 24x2,0 ml	Φ 11x43 mm
14854	Φ 84 na butelki / for bottles 200 ml	Φ 57x113 mm
14855	Φ 38 na probówkę / for tube 50 ml Falcon	Φ 30x120 mm
14856	Φ 38 na probówkę / for tube 15 ml Falcon	Φ 17x120 mm
14859	Φ 84 na probówkę / for tube 3x50 ml	Φ 35x100 mm
14860	Φ 83x95 na probówkę / for tube 28x1,2 ml S-Monovette	Φ 9x82,3 mm
14864	Φ 38 na probówkę / for tube 24x1,2 ml S-Monovette	Φ 9x82,3 mm
14862	Φ 83x95 na probówkę / for tube 25x5 ml	Φ 13,1x100 mm
14863	Φ 83x95 na probówkę / for tube 25x5 ml	Φ 13,1x100 mm

PROBÓWKI TUBES

nr kat. cat. no.	opis	description
15011	Probówka z PP 2 ml okrągłodenna z pokrywką	Polypropylene round-bottom test tube 2 ml with cap
15015	Probówka z PP 2 ml z pokrywką	PP test tube 1,2 ml s-Monovette
15016	Probówka z PP 1,2 ml s-Monovette	Polycarbonate round-bottom bottle 250 ml
15017	Butelka z PC 250 ml okrągłodenna	PP test tube 2 ml with cap
15040	Probówka z PP 100 ml z pokrywką	PP test tube 100 ml with cap
15046	Probówka z PP 14 ml z pokrywką	PP test tube 14 ml with cap
15048	Probówka z PP 15 ml Nalgene	PP test tube 15 ml Nalgene
15050	Probówka z PP 15 ml Falcon	PP test tube 15 ml Falcon
15051	Probówka z PP 50 ml Nalgene	PP test tube 50 ml Nalgene
15052	Probówka z PP 50 ml Falcon	PP test tube 50 ml Falcon
15053	Probówka z PP 10 ml z pokrywką	PP test tube 10 ml with cap
15054	Probówka z PP 6 ml z pokrywką	PP test tube 6 ml with cap
15055	Probówka z PP 30 ml z pokrywką	PP test tube 30 ml with cap
15056	Probówka z poliwęglanu 30 ml Nalgene z pokrywką	PC test tube 30 ml Nalgene with cap
15067	Probówka z poliwęglanu z pokrywką 85 ml Nalgene	PC test tube 85 ml Nalgene with cap
15102	Płytki titracyjna z pokrywką (MTP)	Micro titer plate with cap (MTP)
15115	Probówka szklana 100 ml	Glass tube 100 ml
15116	Probówka szklana 50 ml	Glass tube 50 ml
15118	Probówka szklana 10 ml	Glass tube 10 ml
15119	Probówka szklana 7 ml	Glass tube 7 ml
15120	Probówka szklana 5 ml	Glass tube 5 ml
15121	Probówka z PP 10 ml z korkiem	PP test tube 10 ml with stopper
15122	Probówka PCR szeregową 8x0,2 ml	PP PCR test tube 8x0,2 ml
15124	Probówka z PP 0,4 ml	PP test tube 0,4 ml
15125	Probówka z PP 0,2 ml PCR	PP test tube 0,2 ml PCR
15127	Probówka z PP 0,5 ml z pokrywką	PP test tube 0,5 ml with cap
15128	Probówka z PP 1,5 ml z pokrywką	PP test tube 1,5 ml with cap
15130	Probówka PCR szeregową 8x0,2 ml	PP PCR test tube 8x0,2 ml
15131	Probówka PCR szeregową 4x0,2 ml	PP PCR test tube 4x0,2 ml
15175	Butelka z PP 250 ml Herolab	PP bottle 250 ml Herolab
15176	Butelka z poliwęglanu 250 ml Herolab	PC bottle 250 ml Herolab
15419	Probówka z PP 5 ml	PP test tube 5 ml
15424	Probówka z pokrywką z PP 30 ml Nalgene	PP test tube 30 ml Nalgene with cap
15440	Butelka z PP 200 ml	PP bottle 200 ml
15796	ASTM cylindryczne, dno stożkowe	ASTM cylindrical, in the lower part conical
15797	ASTM w kształcie gruszki, dno stożkowe	ASTM in the shape of the pear, in the lower part conical
15852	Butelka z PP 400 ml	PP bottle 400 ml

PP – polipropylen, polypropylene, PC – poliwęglan, polycarbonate

WYPOSAŻENIE DODATKOWE OTHER ACCESSORIES

nr kat. cat. no.	opis	description
16412	Szafka pod wirówkę	Locker under centrifuge
16598	Zestaw do rejestracji parametrów pracy poprzez złącze USB	USB kit – for recording parameters
17151	Pokrywka z poliwęglanu do pojemników 13275	Polycarbonate cap for bucket No. 13275
17179	Pokrywka z aluminium do pojemników 13178	Aluminum cap for bucket No. 13178
17792	Pokrywka z aluminium do pojemników 13792	Aluminum cap for bucket No. 13792
17832	Pokrywka z poliwęglanu do pojemników 13831	Polycarbonate cap for bucket No. 13831
17834	Pokrywka z aluminium do pojemników 13833	Aluminum cap for bucket No. 13833

DECLARATION OF CONFORMITY

Product

Laboratory centrifuge

Model

MPW-380

Product classification on the basis of
the Directive 98/79/EC

Non classified to list A or B and not for
self-testing

Product complies with the requirements:

• **Directive 98/79/EC (IVD), including the requirements of harmonised standards:**

PN-EN ISO 13485:2012

PN-EN ISO 18113-3:2011

PN-EN ISO 13485:2012/AC:2013-03

PN-EN 61010-2-101:2005

PN-EN 13612:2006

PN-EN 61326-2-6:2013-08

PN-EN ISO 14971:2012

PN-EN ISO 62366:2008

• **selected harmonized standards of Directive 2006/95/EC (LVD):**

PN-EN 61010-1:2011

PN-EN 61010-2-020:2008

• **Directive 2004/108/WE (EMC)**

• **standard PN-EN ISO 15223-1:2012**

CZŁONEK ZARZĄDU

PREZES ZARZĄDU

Wojciech Nojszewski

mgr Hanna Małczyńska

„MPW MED. INSTRUMENTS”
SPÓŁDZIELNIA PRACY
w Warszawie

Warsaw, 13.11.2014

„MPW MED. INSTRUMENTS”
SPÓŁDZIELNIA PRACY

Warsaw, 46 Boremlowska Street
Quality policy in line with ISO 9001:2008
Certifying authority



nr 10.380.03

DECLARATION OF CONFORMITY

Product **Refrigerated laboratory centrifuge**

Model **MPW-380R**

Product classification on the basis of the Directive 98/79/EC Non classified to list A or B and not for self-testing

Product complies with the requirements:

• **Directive 98/79/EC (IVD), including the requirements of harmonised standards:**

PN-EN ISO 13485:2012

PN-EN ISO 18113-3:2011

PN-EN ISO 13485:2012/AC:2013-03

PN-EN 61010-2-101:2005

PN-EN 13612:2006

PN-EN 61326-2-6:2013-08

PN-EN ISO 14971:2012

PN-EN ISO 62366:2008

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PN-EN 61010-2-020:2008

• **Directive 2004/108/WE (EMC)**

• **standard PN-EN ISO 15223-1:2012**

CZŁONEK ZARZĄDU PREZES ZARZĄDU

Wojciech Nojszewski

mgr Hanna Małczyńska

**„MPW MED. INSTRUMENTS”
SPÓŁDZIELNIA PRACY
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Quality policy in line with ISO 9001:2008

Certifying authority



Warsaw, 13.11.2014

nr 10.380R.03

DECLARATION OF DECONTAMINATION

In order to protect our employees please fill out the declaration of decontamination completely before sending centrifuge to the manufacturer (repair).

1. **Device**

– type:

– serial No.:

2. **Description of decontamination**

(see user manual)

.....

.....

.....

.....

3. **Decontamination carried out by:**

– name:

4. **Date and signature**

.....

DECLARATION OF DECONTAMINATION

In order to protect our employees please fill out the declaration of decontamination completely before sending centrifuge to the manufacturer (return).

5. **Device**

– type:

– serial No.:

6. **Description of decontamination**

(see user manual)

.....

.....

.....

.....

7. **Decontamination carried out by:**

– name:

8. **Date and signature**

.....

NOMOGRAM

